(54) Title: METHOD AND SYSTEM FOR PROVIDING CUSTOMIZED INFORMATION DURING CALL SETUP PROCESS IN TELECOMMUNICATION SYSTEMS
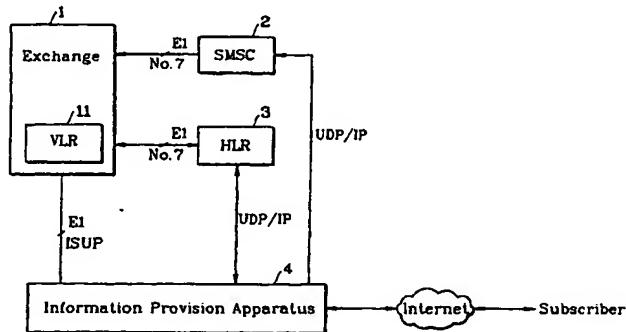
(57) Abstract: Disclosed relates to a method and system for providing customized information to a calling subscriber during a call setup process, that is, while the subscriber is waiting for a called party's answer after making a call setup request. The invention provides an information provision apparatus (4), interconnecting with an exchange (1), for providing the realtime customized information to an originating subscriber. The apparatus (4) capable of connecting the Internet is coupled with a short message service center (2) through a predetermined closed network. The mobile subscriber can make a new subscription for the information provision service on the Internet. The subscription state is stored in a home location register (HLR) (3). If the subscriber makes a call, the exchange (1) interconnected with the apparatus (4) executes the service to the originating subscriber based on the subscription information of the HLR (3). The service is continued till a called party answers to the call. The apparatus (4) supplies access information with which the originating subscriber may obtain more detailed information additionally. The access information including a telephone number, URL, etc. is provided to the originating subscriber through the short message service center (2). The customized information which the subscriber receives can be selected by the subscriber on the Internet, or alternated according to the service subscriber's information or the subscriber's location information automatically.

METHOD AND SYSTEM FOR PROVIDING CUSTOMIZED INFORMATION
DURING CALL SETUP PROCESS
IN TELECOMMUNICATION SYSTEMS

Technical Field

5   The present invention relates to a telecommunication

system, especially to a method and system for providing

realtime customized information to a calling subscriber during

a call setup process.

Background Art

10   As communication techniques have been advanced rapidly,

various telecommunication systems have been used. In the past,

the communication systems have been on the basis of wired

communication systems using a public switched telephone

network (PSTN). Recently, an integrated services digital

15   network (ISDN) or a wireless local loop (WLL) system have been

widely adapted and personal mobile communication systems have

been popularized as well.   Especially, the growth of the

field of the personal mobile communication system is

remarkable. The mobile communication systems which started

20   with an analog type have been advanced to digital systems such

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as a time division multiple access (TDMA) system and a code
division multiple access (CDMA) system. Furthermore, an "IMT-
2000" system capable of transmitting and receiving even moving
image data has been rapidly developed. Besides, as wireless

5   Internet techniques such as wireless application protocol
(WAP) have been developed, communication subscribers can
obtain access to resources on web sites by means of a mobile
terminal having web browsers. That is, these technical
improvements provide a mobile terminal which is used not only

10   for speech communications but also for data communications.

Meanwhile, it is very inconvenient to a user when he or
she tries to obtain necessary information through the mobile
terminal, since it has fewer input means than a keyboard of a
personal computer

15   Besides, the information which can be obtained through
the communication terminal is generated variously and
increased enormously with the wide use of Internet network.
Here, if the information on is composed of huge data, it is
desired to receive by means of a communication terminal

20   including a stable communication environment, an appropriate
·display means, etc., such as a personal computer. Meanwhile,
if the amount of information is not huge and the realtime
transmission is important such as a news, a financial

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information, a notification, an advertisement, etc., and if it can be received by means of a mobile terminal, it must be more advantageous and convenient to the receiver. However, as described above, since the mobile terminal has no appropriate

5   data input means such as the keyboard, it is very inconvenient to obtain the realtime information through the mobile terminal. Furthermore, in case of notifications, or desired advertisements, for example, it is substantially impossible to find and obtain such information on time because the user can

10 not notice even the existence of such information.

Disclosure of Invention

Accordingly, the object of the present invention is to provide method and system for supplying realtime customized

15 information to a calling subscriber during a call setup process, that is, while the calling subscriber is waiting for a called party's answer after making a call setup request using a mobile terminal.

To accomplish an object in accordance with a first aspect

20 of the present invention, there is provided a method for supplying customized information to a calling subscriber during a call setup process in a telecommunication system which includes a plurality of exchanges and enables a caller

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and a receiver to communicate with each other by performing a
call control process, the method comprising the steps of:
receiving a call setup request from the caller; identifying
whether the caller is an information provision service
5   subscriber or not; supplying a predetermined information
provision service if the caller is identified as a valid
subscriber in the step of identification; executing the call
control process for the caller; and connecting the call
between the caller and a called party when the call is
10   answered by the called party.

To accomplish another object in accordance with a second
aspect of the present invention, there is provided a method
for supplying customized information during a call setup
process in a telecommunication system which includes a
15   plurality of exchanges and enables a caller and a receiver to
communicate with each other by performing a call control
process, the method comprising the steps of: receiving a call
request from the caller; identifying whether the caller is an
information provision service subscriber or not; providing an
20   access information to the caller for gaining access to
predetermined detailed information if the caller is identified
as the subscriber in the step of identification; executing the
call control process for the caller; and connecting the call

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between the caller and a called party when the called party

answers to the call.

To accomplish another object in accordance with a first

aspect of the present invention, there is provided a system

5   for supplying predetermined customized information during a

call setup process in a telecommunication system including: a

home location register for providing predetermined call

routing information about information provision service

subscribers; a visitor location register for storing

10   subscribers' information whether an originating call for each

subscriber is one that needs to be referred to the home

location register or not; an exchange, composed in a switching

network, for executing a call control process, for referring

to the visitor location register against the originating call

15   from the subscriber, and for performing a call routing process

to the information provision service using the routing

information from the home location register if the caller is

one that needs to be referred to the home location register;

and an information provision apparatus, including a path

20   control function for routing the call of the originating

subscriber to the called party, for providing predetermined

customized information to the originating subscriber of the

call routed by the exchange, and for connecting the

5

originating subscriber to the called party when the call is

answered by the called party.

To accomplish another object in accordance with a second

aspect of the present invention, there is provided a system

5   for supplying customized information during a call setup

process in a telecommunication system comprising: a home

location register for providing predetermined call routing

information about the subscribers; a visitor location register

for storing subscribers' information whether an originating

10   call for each subscriber is one that needs to be referred to

the home location register or not; an exchange, composed in a

switching network, for executing a call control process, for

referring the visitor location register against the

originating call, for performing a call routing process to the

15   information provision apparatus using the routing information

of the home location register if the caller is one that needs

to be referred to the home location register, for executing a

path control process based upon a called number, and for

connecting the originating subscriber to the called party when

20   the called party answers to the call; and an information

provision apparatus for providing predetermined customized

information to the originating subscriber through the

exchange.

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To accomplish another object in accordance with a third
aspect of the present invention, there is provided a system
for supplying customized information during a call setup
process in a telecommunication system comprising: a first

5   exchange having a path control function; a second exchange
having no path control function; and an information provision
apparatus, interconnected with both the first and second
exchanges through trunks, including the selective path control
function, for providing predetermined customized information

10   to the originating subscriber of the call routed by the
exchange, the information provision apparatus executing the
path control process for the call from the second exchange.

To accomplish another object in accordance with a fourth
aspect of the present invention, there is provided a system

15   for supplying customized information during a call setup
process in a telecommunication system comprising: an exchange,
composed in a switching network, having a database for storing
subscribers' information indicating whether an originating
caller is an information service subscriber or not, for

20   executing a call control process, and for routing the
corresponding call to an intelligent network if the caller is
the information service subscriber; and an intelligent network
including a service switching part for performing the

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information provision service, an intelligent peripheral for

storing a plurality of customized information to be provided

to the subscribers, and a service switching part for

performing a switching process for the call from the exchange,

5   the service switching part transmitting a message including at

least a calling party's number to the service control part,

the service control part controlling the service switching

part to connect the call to the intelligent peripheral and

controlling the intelligent peripheral to output predetermined

10   customized information, and the service switching part

connecting the originating subscriber to the called party when

the called party answers to the call.

The information provision apparatus is configured to be

interconnected with the Internet and a short message service

15   center.

Furthermore, the information provision apparatus

comprises: an information service process subsystem,

interconnected with an exchange through trunks, for executing

a call routing process and a call connection process, for

20   transmitting a service setup request message having at least a

calling party's number to an information service

control/management subsystem when the call is routed from the

exchange, and for providing predetermined customized

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information to the originating subscriber according to a

service setup response message output from the information

service control/management subsystem; and an information

service control/management subsystem, including a database for

5   storing subscribers' information and service information, for

transmitting the service setup response message including at

least an information ID against the information setup request

message to the information service process subsystem, the

information service process subsystem including a

10   predetermined number translation table, transmitting the

service setup request message, executing a terminating call

process, and performing the call connection process between

the originating subscriber and a called party when the call is

answered by the called party.

15   According to the present invention, the information

provision apparatus for the information provision service is

interconnected with the exchange. The information provision

apparatus capable of connecting to the Internet is connected

with a short message service center through a predetermined

20   communication network. The communication network subscribers

can make a new subscription for the information provision

service on the Internet. The subscription state is stored in

the home location register as a service information. When the

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subscriber makes a call, the exchange connects the call to the information provision apparatus. Then the apparatus supplies the customized information to the subscriber until the called party answers to the call.

5   Besides, the apparatus provides an access information to the originating subscriber, with which the subscriber can obtain more detailed information additionally. The access information such as a telephone number or a uniform resource locators URL is provided to the originating subscriber through

10   the short message service. Here, the subscriber can select the kind of the customized on the Internet in advance, and the customized information can be also alternated automatically according to the subscriber's information or subscriber's location information as well.

15   It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

Brief Description of Drawings

20   The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a party of this specification, illustrate

embodiments of the invention and together with the description

serve to explain the principles of the invention:

In the drawings:

Fig. 1 is a block diagram showing a general mobile

5   communication system to which the present invention is

applied;

Fig. 2 is a block diagram illustrating a basic concept of

a method and system for providing realtime customized

information during a call setup process in accordance with the

10   present invention;

Fig. 3 is a block diagram showing an example of the

concrete configuration of the information provision apparatus

in Fig. 2;

Fig. 4 to Fig. 9 are arrow diagrams illustrating the

15   operations of the information provision apparatus according to

the present invention;

Fig. 10 is a block diagram showing another example of the

information service process subsystem (IPS) in Fig. 3; and

Fig. 11 is a block diagram depicting a configuration of

20   the information provision apparatus using an intelligent

network.

Best Mode for Carrying Out the Invention

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Reference will now be made in detail to the preferred

embodiments of the present invention, examples of which are

illustrated in the accompanying drawings.

Now referring to Fig. 1, a general mobile communication

5   system comprises a plurality of exchanges EXs (EX1 to EXn) for

switching communication paths. The respective exchanges EXs

are interconnected through an E1 link. Each of the exchanges

EXs is connected with a plurality of base station controller

BCs (BC1 to BCn). Each of the base station controllers BCs is

10   coupled to a plurality of base stations BSs (BS1 to BSn).

Besides, each of the base stations BSs is linked to a

plurality of mobile stations MSs through a common air

interface such as TDMA or CDMA.

Meanwhile, each of the exchanges EXs is connected to the

15   public switched telephone network (PSTN), the integrated

services digital network (ISDN), or other mobile communication

networks through predetermined gateways GWs (G1 to G3), and

linked to the Internet through an inter-working function (IWF)

and a gateway G4.

20   In the configuration described above, when a

communication network subscriber tries to originate a call

with a normal registered mobile station MS, that is, when the

subscriber inputs a called number of the other communication

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party and presses an originating key, for example a SEND key, both the originating number (calling number) and the terminating number (called number) are forwarded to the exchange EX through the base station BS and the base station

5 controller BC. Then, the exchange EX translates the called number to execute the call connection, thus enabling the originating terminal to launch communications. That is, if the called party belongs to the same communication network with eh calling party, the exchange EX gets a routing information

10 through the home location register HLR, not depicted, and routes the call to a called party's exchange EX based on the read data, thus enabling the caller to communicate with the receiver. If the called party does not belong to the same network, the exchange EX routes the call to the other

15 communication network through the predetermined gateway GW (G1 to G4).

Meanwhile, while processing a terminating call, the switching network executes an alert process of supplying ring signals, etc., to the terminating terminal, and supplies the

20 ring back tone or the other information equivalent to the ring back tone to the originating party. Here, these signals are supplied until the called party answers. However, the waiting time for the called party's answer is absolutely unnecessary

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in the caller's position. Furthermore, if the receiver is a

mobile subscriber, the caller may often wait for the answer

longer than in case of using a wire telephone, not only

because of the ambient noise, but also because of the

5   unexpectedly weakened environments of the communication

network. It has been measured that it takes usually eight to

twelve seconds to receive the answer from the called party in

the mobile environment.

Accordingly, the present invention is disclosed to

10   provide predetermined customized information to the calling

subscriber during a call setup process, that is, while

waiting time for the called party's answer, thus utilizing the

mobile station MS efficiently as a means of obtaining

necessary information during the waiting.

15   Referring to Fig. 2, reference numeral 1 denotes the

exchange such as a local exchange, a tandem exchange or a toll

exchange. The exchange 1 is coupled to a short message service

center (SMSC) 2 and a home location register (HLR) 3 through

an E1 link and a No. 7 protocol, for example. As known well,

20   the SMSC 2 is to transmit paging call numbers or character

strings. The HLR 3 is to store the mobile subscribers'

information including subscriber numbers, terminal types,

terminal equipment numbers, subscriber's names, present

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location information of terminals, authentication information,

etc. The subscribers' information of the HLR 3 is provided

appropriately to the exchange 1 and stored in a visitor

location register (VLR) 11. The VLR 11 stores the subscribers'

5   information of the HLR 3 corresponding to the subscribers

located under the jurisdiction of the exchange 1. Repeatedly,

the exchange 1, connected with the other plural exchanges,

base station controllers, gateways, etc., as depicted in Fig.

1, enables the originating subscriber to communicate with the

10   other party. Referring back to Fig. 2, an information

provision apparatus 4 is coupled with the exchange 1 through

the E1 link and an ISDN user part (ISUP) for example, and with

the SMSC 2 and the HLR 3 through a 100 Base-T closed network

(or a local area network) and a user datagram

15   protocol/Internet protocol (UDP/IP) for example. Besides, the

information provision apparatus is set to be connected with

the subscribers on the Internet. The subscribers can make new

subscriptions to the information provision service and select

necessary customized information on the Internet in advance.

20   Of course, this subscription procedure can be done through the

other communication networks including off-line process.

Furthermore, the information provision apparatus can provide

voluntarily designated information, if the subscriber doesn't

select the kind of information. For example, notifications,

advertisements, etc., can be provided selectively according to

the location information, or the service subscriber's

information including subscriber's name, occupation, age, sex,

5   income, hobby, and so on.

When the mobile subscriber has become a service

subscriber to the information providing service on the

Internet, the subscription state will be stored in the HLR 3.

The registration of the subscription information to the HLR 3

10   may be executed through the closed network, as shown in Fig.

2. Here, it is necessary to establish an appropriate interface

between the HLR 3 and the information provision apparatus 4.

Besides, the registration of the subscription information to

the HLR 3 can be executed in a manner that a manager of the

15   information provision apparatus 4 supplies the service

information to a manager of the communication network system

through a separate off-line or the other communication

networks.

Meanwhile, the subscription information in the HLR 11 is

20   sent to and stored in the VLR 11, thus being checked when the

call setup request is received from the originating

subscriber. The subscription information, with which the

system decides whether to execute the information provision

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service, can be stored by constructing a separate memory field

or by using an existing memory field. When the call setup

request is received from the originating subscriber, the

exchange 1 supplies the information provision service based

5   upon the service information stored in the VLR 11 to the

originating terminal during the waiting time for the called

party's answer. Here, of course, the information provision

service is executed by interconnecting with the information

provision apparatus 4. The information provision service is

10   executed in the following two manners:

(1) the exchange 1 connects an originating subscriber

with the information provision apparatus 4 when receiving a

call setup request message from a subscribed terminal, and

then executes a call connection process to a called party's

15   exchange in the usual manner. The information provision

apparatus 4 provides predetermined customized information to

the originating subscriber. The exchange 1 couples the

originating subscriber with the called party if an answer

message ANM is received from the called party's exchange; and

20   (2) the exchange 1 routes an originating call to the

apparatus 4 when receiving the call setup request message from

the subscribed terminal. The apparatus 4 provides

predetermined customized information to the originating

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subscriber based upon the call setup request message, and executes the call connection process to the called party's exchange in the same manner with the above usual exchange. The apparatus 4 couples the originating subscriber with the called

5   party if the ISUP ANM is received from the called party's exchange.

It would be found that the above two manners are substantially identical with each other in view of the procedure; that is, they execute the call connection process

10   and, at the same time, provide the customized information if the call setup request message is received, and connect the originating subscriber with the called party if the ISUP ANM is received from the called party, thus providing a normal communications function. However, it would be noted that there

15   is a difference that the call connection process is executed by the exchange 1 in the first manner, by the information provision apparatus 4 in the second manner. Nevertheless, the above two manners are substantially identical with each other because an element corresponding to the exchange 1 is

20   indispensable for the information provision apparatus 4 to execute the call connection successfully. Meanwhile, the first configuration has the advantage that the amount of the trunk resources, installed between the existing switching network

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and the information provision apparatus 4, is required

relatively small, and also has the disadvantage that the

exchanges established in the switching network should be

upgraded. Whereas, the second configuration has the advantage

5   that it is possible to supply the information service, not

changing the existing switching network to a great extent, and

also has the disadvantage that the amount of trunk resources

is required relatively large and the configuration of the

apparatus 4 becomes sophisticated.

10   The information provision apparatus 4 in Fig. 2 can

provide additional information using the short message

service. That is, since the information provision service

according to the invention is terminated when receiving the

called party's answer, more additional information would be

15   necessary. In this case, the apparatus 4 of the invention

supplies the access information, such as the telephone number,

URL, etc., to the originating subscriber through the short

message service center 2 after successfully terminating the

regular information providing service. Subsequently, the

20   subscriber can obtain access to the detailed information by

just pressing, for example, a SEND button of the originating

terminal indicating the access information at present. Of

course, the additional short message service can be executed

selectively by the subscriber's need. Besides, the detailed

information can be provided direct to the subscriber, instead

of using the access information, if necessary.

Furthermore, in the manner described above, the exchange

5   1 triggers the information service for the caller based on the

registered information of the VLR 11. Here, it is possible

that the exchange 1 provides the information service to the

caller selectively according to predetermined service access

code (SAC) that the subscriber dialed. For example, if SAC for

10   the information service is '#123' and if the subscriber inputs

'#123' prior to the called number, that is, if the called

number, included in the call setup request message received

from the originating terminal, starts with #123, then, the

exchange 1 initiates the information service by routing the

15   call to the information provision apparatus 4. If not, the

exchange 1 just executes the usual call connection process.

Now referring to Fig. 3, a block diagram showing an

example of the concrete configuration of the information

provision apparatus 4 in Fig. 2, the information provision

20   apparatus 4 comprises a web server 10, an information service

control and management subsystem (ICMS) 20 and an information

service process subsystem (IPS) 30. The interconnection

between the subsystems 10 and 20, and the subsystems 20 and 30

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are established through a closed network 40 of the 100 Base-T Ethernet frame.

The web server 10, an Internet interface device, supplies an on-line services, through which subscriptions,

5   cancellations, information inquiries and amendments, etc. are executed by the communication and/or service subscribers and the information providers (contents providers). The web server 10 supplies the above described information received on the Internet to the ICMS 20.

10   The ICMS 20, controlling the overall information providing service, comprises an information service management part (IMP) 21, an information service control part (ICP) 22 and a database 23. The IMP 21 and the ICP 22 are linked to the closed network 40 through a hub 24. The database 23 includes

15   various necessary information such as service subscribers' information, contents providers' information, various customized information to be provided to the subscribers, and restriction information for restricting the service provision condition, etc. The stored information of the database 23 is

20   managed by the ICP 22. The ICP 22 selects information to be provided to the subscriber, according to the IPS 30's demand, and transmits information code corresponding to the selected information, i.e., information ID, to the IPS 30. The ICP 22

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includes further several functions such as statistics for

collecting and providing various processing data to the IPS

30, system maintenance, and system download for downloading

the customized information to the IPS 30 according to the

5   demands from the system operator. Besides, after completing

the information providing service successfully, the ICP 22

connected with the short message service center 2 provides the

access information such as a telephone number or a URL to the

subscriber so that the subscriber can obtain more detailed

10   information additionally. Meanwhile, the IMP 21 coupled with

the web server 10 executes the overall management including

addition, deletion, amendment, etc. of the subscribers'

information, the contents providers' information and the

customized information. Furthermore, the IMP 21 provides a

15   function of graphic user interface.

The IPS 30, linked to the exchange 1 through the E1 link

and the ISUP protocol, provides the function of call routing,

call connection and information transmission. The IPS 30

comprises a specialized resource management part (SRMP) 31, a

20   specialized resource signaling part (SRSP) 32, a specialized

resource part (SRP) 33 and a switch part (SWP) 34. The SRMP 31

is linked to the closed network 40 through a hub 35. The SRMP

31, the SRSP 32, the SRP 33 and SWP 34 are interconnected

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through a control bus 36. Besides, it is possible that the
ICMS 20 and the SRMP 31 are coupled with each other through
the No. 7 protocol.

The SRMP 31 executes a function of supervising the El
5   trunk, a function of the No. 7 protocol level 3 and 4, and a
function of information provision service. Furthermore, the
SRMP 31 can perform the call routing process of the called
party with a predetermined number translation table.

The SRSP 32 comprises an El interface 321, a traffic
10   interface 322 for transmitting and receiving traffic data, and
a protocol process unit 323 for processing the No 7 level 1
and 2 protocol. The SRSP 32 controls an El trunk connection
with the exchange 1, a function of transmitting and receiving
traffic data including the customized information, and a
15   function of transmitting and receiving data through the ISUP
protocol between the exchange 1 and the SRMP 31.

The SRP 33 comprises a specialized resource control unit
331 for sending the selected information according to the
information ID received from the SRMP 31, and an information
20   generating unit 332, including a storing means for storing a
plurality of customized information, for outputting
predetermined customized information according to the control
of the specialized resource control unit 331. The specialized

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resource control unit 331 controls the output of the
customized information, and updates the customized information
for the information generating unit 332 corresponding to the
downloading process executed through the ICP 22 in the ICMS 20

5   and the SRMP 31.

The SWP 34 includes a switch device 341 for switch-
connecting the traffic interface 322 of SRSP 32 and the
information generating unit 332 of the SRP 33, and a switch
control unit 342 for controlling the switch device 341

10   according to the control data from the SRMP 31. Consequently,
the SWP 34 sends the customized information, output from the
information generating unit 332, to the subscriber, according
to the control of the SRMP 31, and serves the transmission and
reception of No. 7 signal data between the exchange 1 and the

15   protocol process unit 323.

Hereinafter, the operations of the system comprised of
the above configuration will be discussed.

First, the data updating operation for the database 23 of
the ICMS 20 is performed as follows:

20   As described in detail above, the database 23 includes
various statistics regarding the information provision service
generated by the ICP 22, as well as the basic information such
as the service subscribers' information, the contents

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providers' information and the customized information to be provided to the subscribers. Here, the basic information is updated through on-line or off-line. The off-line updating operation is executed by the manager of the ICMS 20. That is,

5 the manager gains access to the database 23 through the IMP 21 and the ICP 22 to execute the data updating process. The on-line updating operation is performed through the web server 10. The web server 10 provides a predetermined web page, through which the mobile subscriber and the contents provider

10 subscribe to the information provision service and amend the subscription state. The above subscription information made through the web page is stored in a predetermined directory in the web server 10 and accessed by the IMP 21 of the ICMS 20 at regular intervals. Here, the access to the information can be

15 executed by a program automatically or by a service manager manually. Then, the accessed information is updated to the database 23 through the ICP 22 of the ICMS 20.

The customized information among the updated information of the database 23 is transmitted to the IPS 30 and downloaded

20 to the information generating unit 332 of the SRP 33. That is, the ICP 22 of the ICMS 20 transmits the updated customized information to the SRMP 31 through the closed network 40. The SRMP 31 sends the received information to the specialized

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resource control unit 331 of the SRP 33 so as to update the information generating unit 332. The information generating unit 332 stores the information ID for information discrimination and the customized information corresponding to

5   the information ID. Meanwhile, the service information regarding the new subscription, cancellation, etc., among the updated information of the database 23 is supplied to the manager of the communication network, and used to update the HLR 3.

10   Next, the procedure for providing the realtime customized information to the subscriber is as follows:

If a call setup request message is received from an originating terminal, the exchange 1 in Fig. 2 refers to the VLR 11 for the subscriber's profile information based on the

15   originating number included in the call setup request message. Here, the VLR 11 has predetermined flag data for the individual callers. The flag data indicate whether or not the exchange 1 should refers to the HLR 3 to execute the originating call process. As a result of referring to the VLR

20   11, if the flag data is not set, the exchange 1 executes a normal call connection. That is, the exchange 1 performs a terminating call process by translating the called number included in the call setup request message. Whereas, if the

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flag data is set, the exchange 1 transmits an origination

request message (ORREQ) including the originating number and

the called number to the HLR 3 according to an IS-41C

protocol, for example. Then, the HLR 3 receiving the ORREQ

5   message from the exchange 1 identifies whether the caller is a

service subscriber or not. If so, the HLR 3 transmits an orreq

message including a call routing information to the exchange

1. Here, the call routing information is to connect the

originating caller with the information provision apparatus 4.

10   If the orreq message is received from the HLR 3, the

exchange 1 performs the call routing process by transmitting a

predetermined initial address message (IAM) to the information

provision apparatus 4. The IAM includes the originating number

and the called number, and the originating caller's location

15   information if necessary. The caller's location information is

transmitted by adding the corresponding information to a user-

to-user information (UUI) parameter of the IAM, for example.

Table 1 given below shows, by way of example, the

configuration of the UUI parameter, wherein a system ID

20   denotes a network identification number for an originating

exchange, a switch number is a discrimination number for the

originating exchange, a BSC ID means a discrimination number

for the base station controller and a BS ID is a

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discrimination number for the originating subscriber's the base station.

[Table 1]

8	7	6	5	4	3	2	1	Bit octet
User-to User information								1
UUI length								2
Protocol discriminator								3
Protocol discriminator length								4
System ID								5
								6
Switch number								7
BSC ID								8
BS ID								9

Fig. 4 shows a process of executing the information provision service in the information provision apparatus 4, where the service is performed successfully.

If the initial address message (IAM) is received from the originating exchange, the IAM is applied to the protocol process unit 323 of the SRSP 32 by way of the E1 interface 321 and the traffic interface 322 in the SRSP 32, and the switch device 341 of the SWP 34, then, transmitted to the SRMP 31 through the control bus 36. Next, the SRMP 31 generates a service request message, based on the received IAM including the originating number, the called number and the subscriber's location information, and sends it to the ICP 22 of the ICMS

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20 through the closed network 40.

Table 2 given below shows, by way of example, the configuration of the service request message transmitted from the SRMP 31 to ICP 22.

5   [Table 2]

Field	Length
Message ID	1
IPS number	1
Originating number length	1
D0	
D1	11
~	
D10	
Called number length	1
D0	
D1	25
~	
D12	
Originating location information length	1
Originating subscriber's location information	5

In Table 2, an IPS number denotes the identification number of the IPS 30, in case that plural IPSs 30 are established according to the increase of the service subscriber.

25   Besides, the SRMP 31 generates an address complete message (ACM), as a response to the IAM from the originating

exchange, and transmits it to the originating exchange by way
of the protocol process unit 323, the switch device 341, the
traffic interface 322 and the E1 interface. IF the service
request message, as shown in Table 2, is received from the
5   SRMP 31, the ICP 22 of the ICMS 20 gains access to the
database 23 to select the information ID, i.e., the kind of
information to be supplied to the corresponding subscriber,
based on the originating subscriber's number and the location
information in the received information. Then, the ICP 22
10   generates a service setup response message and transmits it to
the SRMP 31.

Table 3 given below shows, by way of example, the
configuration of the service setup response message. A CR ID
denotes a call reference ID allotted by the ICP 22 against the
15   service setup request message from the SRMP 31 as a
discrimination number of the corresponding call. A RSLT
represents a result datum indicating whether to execute the
information provision service.

[Table 3]

20

Field	Length
Message ID	1
IPS number	1
CR ID	2

30

[Table 3-continued]

Field	Length
RSLT	1
Information ID	2
Delay time	1

5

That is, if the value of the RSLT is "0", the service is to be
provided, whereas, if the value is not "0", the service is to
be suspended. Here, the service suspension condition includes:
when the originating caller is not the service subscriber;

10   when the database 23 gets out of order; when the originating
subscriber is set to an inactive state; when service time is
closed; when no appropriate customized information is
available, etc. An information ID denotes the kind of
information to be supplied to the subscriber. Besides, a delay

15   time is a value of time for delaying the call setup to the
called party. That is, there would be a difference in the
duration of the customized information according to the kind
of the information. In case that the amount of the customized
information is large, but the called party answers shortly,

20   that is, there is given no ample time to receive the
customized information completely, the subscriber fails in
receiving all the information. Accordingly, the delay time can
be set, for example, 0 to 30 seconds variably, according to

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the amount of the customized information, or according to the subscriber's demand.

When the service setup response message, as shown in Table 3, is given from the ICP 22 to the SRMP 31, the SRMP 31 executes the information provision service based upon the received message. First, if the value of the RSLT of the received service setup response message is "0", that is, the service is to be provided, the SRMP 31 transmits a channel setup message to the switch control unit 342 of the SWP 34. The SRMP 31 also couples the originating subscriber with the SRP 33 through a predetermined traffic channel and sends the above channel information and the information ID received from the ICP 22 to the specialized resource control part 331. Then, the specialized resource control unit 331 controls the information generating unit 332 to forward the customized information corresponding to the information ID through an allotted traffic channel, thus providing the customized information to the originating subscriber. Subsequently, if the delay time passes, the time being defined and included in the service setup response message, the SRMP 31 translates the called number based on the number translation table to execute an outgoing trunk call process. That is, the SRMP 31 transmits the IAM to the terminating exchange. Then, if an answer

32

message (ANM) is received from the terminating exchange against the IAM, the SRMP 31 outputs a channel release message to the specialized resource control unit 331 of the SRP 33 so as to stop providing the service for the subscriber. At the

5   same time, the SRMP 31 generates a service provision report message, indicating the result of the service provision, and forwards it to the ICP 22.

Meanwhile, Table 4 given below shows, by way of example, the configuration of the service provision report message

10   described above. A RSN represents a reason of terminating the information provision service.

[Table 4]

Field	Length
Message ID	1
IPS number	1
CR ID	2
RSN	1

Table 5, given below shows, by way of example, the terminating states of the information provision service

20   according to the data values of the RSN.

[Table 5]

Data value	Service Termination Reasons
0	Service completed, Call succeeded

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1	Service completed, Call failed
2	Service completed, Call unknown
3	Call cancelled by caller
4	Call cancelled due to abnormal outgoing trunk call setup
5	Failed in switch-connection
6	Internal timer expired
7	Failed in terminating call setup due to internal reasons

When the ANM is received from the terminating exchange, the SRMP 31 controls the SWP 34 to connect the originating subscriber with the terminating exchange, and sends the ANM to the originating exchange. Consequently, the caller and the called party are connected with each other through the traffic channel.

Furthermore, if the service provision report message indicating that the service provision is executed normally is received from the SRMP 31, the ICP 22 in the ICMS 20 gains access to the database 23 to check whether or not the customized information is one that needs supplying additional access information such as the telephone number or URL information with which the subscriber may obtain more detailed information. If so, the ICMS 20 outputs a message to the short message center so as to transmit the access information to the

34

subscriber.

Meanwhile, in executing the information provision service describe above, it may happen that the called party doesn't answer over a predetermined time. In this case, it may happen that the customized information is provided repeatedly and continuously to the originating subscriber. Considering the above situation, the ICP 22 starts a predetermined timer programmably after transmitting the service setup response message to the SRMP 31. So, if the service provision report message is not received from the SRMP 31 for a predetermined time set by the timer, the ICP 22 forwards a service cancel request message to the SRMP 31. As described above, the ICP 22 can apply the service cancel request message to the SRMP 31 in order to stop supplying the information provision service, if necessary.

Table 6, given below shows, by way of example, the structure of the service cancel request message.

[Table 6]

Field	Length
Message ID	1
IPS number	1
CR ID	2
RSN	1

35

In Table 6, the RSN represents a reason of terminating the information provision service, that is, the value "0" denotes a normal termination, whereas, the value other than "0" means abnormal terminations. When the service cancel request message is received from the ICP 22, the SRMP 31 controls the SWP 34 and the SRP 33 to stop the information provision service, then, connects the traffic channels between the originating subscriber and the called party.

Meanwhile, as shown in Table 3 and 5, it may happen that the information provision service is not completed as following various abnormal states:

(1) if the value of the RSLT in Table 3 is not "0", by reasons that the caller is not a service subscriber, that the database 23 gets out of order, that the originating subscriber is set in an inactive state, that service time is closed, that no appropriate customized information is available, etc.;

(2) if the originating subscriber cancels the call in the middle of receiving the service;

(3) if the call is cancelled due to an abnormal outgoing trunk call process, for example, if a call release message (REL) is received from the terminating exchange; or

(4) if the internal timer is terminated, for example, if the ANM is not given back from the terminating exchange for a

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predetermined time after sending the IAM, as shown in Fig. 4.

The first case is that a message indicating that the information provision service is impossible is transmitted from the ICP 22 to the SRMP 31. Here, as shown in Fig. 5, the

5   SRMP 31 forwards the IAM to the terminating exchange at once. Next, the SRMP 31 transmits the ANM to the originating exchange if the ANM is received from the terminating exchange, thus executing a normal call routing process.

Fig. 6 illustrates the second case. If the release

10 . message (REL) is received from the originating exchange by reasons that the originating subscriber cancels the call in the middle of receiving the service, etc., the SRMP 31 forwards a release complete message (RLC) to the originating exchange, and sends the service provision report message, as

15   shown in Table 4 and 5, to the ICP 22. Besides, if the REL is received from the originating exchange after transmitting the IAM to the terminating exchange, the SRMP 31 forwards the REL to the terminating exchange as well.

Fig. 7 depicts the third case. If the REL is received

20   from the terminating exchange, the SRMP 31 transmits the RCL as a response to the REL to the terminating exchange. Also, the SRMP 31 sends the service provision report message, as shown in Table 4 and 5, to the ICP 22. Furthermore, the SRMP

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31 controls the SWP 34 and the SRP 33 to stop the information

provision service, and transmits the REL to the originating

exchange to execute the call release procedure.

Fig. 8 explains the fourth case. After transmitting the

5   initial address message (IAM) to the terminating exchange, the

SRMP 31 starts the timer to check whether or not an

appropriate message, for example, the address complete message

(ACM), has been received from the terminating exchange for a

predetermined time. If such a message has not been received

10   within the predetermined time, the SRMP 31 controls the SWP 34

and the SRP 33 to stop the process of providing the service,

and forwards the REL to both the originating and terminating

exchanges to execute the release procedure. Furthermore, the

SRMP 31 generates the service provision report message, as

15   shown in Table 4 and 5, to send it to the ICP 22. Next, the

ICP 22 checks whether the information provision service has

been executed successfully or not, referring to the service

provision report received from the SRMP 31. If so, the ICP 22

obtains access to the database 23 to decide whether or not the

20   customized information is one that needs supplying additional

access information such as the telephone number or URL

information with which the subscriber may obtain more detailed

information. If so, the ICP 22 outputs a message to the short

message center so as to transmit the access information to the subscriber.

Furthermore, the ICP 22 takes statistics on the executed information provision services including the numbers of the succeeded service and failed service, respectively, and whether the subscriber accessed the detailed information additionally using the access information or not. Subsequently, the statistics information is stored to the database 23. Here, it is confirmed whether or not the subscriber received the detailed information using the access information, based on the called number included in the service request message transmitted from the SRMP 31 to the ICP 22. That is, if the originating subscriber executes a call setup request using the access information, the originating call is connected in the same manner described above. Here, the service request message, transmitted from the SRMP 31 to the ICP 22 of the information provision apparatus 4, includes the corresponding access information. Accordingly, it is possible to analyze the reaction and inclination of the subscribers, by counting the numbers of the service request message having the access information as the called number. The various statistics information described above can be checked by the system manager through the ICP 21, or by the

customer through the web server 10 on the Internet.

Meanwhile, the embodiment described above is based on the configuration that the exchange 1 performs the call routing for the originating call to the information provision apparatus 4, and the information provision apparatus 4 executes both the information provision and the terminating path control. Also, it is accomplished by another manner in which the exchange 1 connects the originating subscriber with the information provision apparatus 4, and controls the call routing to the called party, and the information provision apparatus 4 only executes the information provision for the originating subscriber. That is, the exchange 1 is put in charge of the terminating path control and the apparatus 4 takes charge of the information provision service. To embody the above manner, the exchange 1 is to establish the function of the path control for connecting the originating subscriber with the information provision apparatus 4, and simultaneously, for routing the call to the called party. Meanwhile, in the embodiment, the path control function in the information provision apparatus 4 is achieved by means of the specialized resource management part (SRMP) 31 capable of translating the number and controlling the trunk call, the specialized resource signaling part (SRSP) 32, and the switch

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part (SWP) 34. However, these means are not new for the

exchange 1. The conventional exchange already includes the

functions of the number translation, the trunk call control

including incoming trunk and outgoing trunk, and the process

5   for various protocols. In short, the path control function for

the information provision service can be accomplished merely

by upgrading the software of the conventional exchange. If the

exchange 1 includes the path control function, as described

above, the information provision apparatus 4 is utilized only

10   as an apparatus for providing the customized information. The

information provision apparatus 4 in Fig. 3 can be applied

advantageously to a system comprising the exchange having the

path control function.

Fig. 9 illustrates the messages transmitted and received

15   between the exchange 1 having the path control function and

the information provision apparatus 4 for providing the

customized information only. The messages pursuant to the ISUP

protocol are used to transmit and receive data for the

information provision service.

20   If the call setup request message is received from the

originating terminal, as described in detail above, the

exchange 1 refers to the VLR 11 and the HLR 3 based on the

originating number included in the call setup request message,

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and receives the orreq message from the HLR 3. The orreq

message includes the routing information corresponding to the

information provision apparatus for providing the customized

information to the originating subscriber. The routing

5   information is to couple the originating subscriber with the

information provision apparatus during the call setup process.

If the orreq message is received from the HLR 3, the exchange

1 transmits the initial address message (IAM), including the

originating number, the called number, and the caller's

10   location information, to the information provision apparatus

4.

If the IAM is received, the SRMP 31 in the information

provision system 4 forwards the address complete message (ACM)

to the originating exchange, and generates the service setup

15   request message, as depicted in Table 1, based on the received

message. The service request message is then sent to the ICP

22 of the ICMS 20. Next, the ICP 22 generates the service

setup response message, as shown in Table 3, and provides it

to the SRMP 31. The SRMP 31 executes the process of providing

20   the customized information based upon the service setup

response message. That is, the SRMP 31 confirms whether or not

the information provision service is available based on the

value of RSLT in the service setup response message. If so,

the SRMP 31 sends the ANM to the originating exchange. In this

case, the delay timing data received in the service setup

response message is included in the ANM. Next, according to

the service setup response message, the SRMP 31 controls the

5   SWP 34 and the SRP 33 to transmit the customized information

through the traffic channel allocated between the exchange 1

and the service provision apparatus 4. Consequently, the

originating subscriber receives the customized information

from the information provision apparatus 4.

10   Subsequently, if the predetermined time, corresponding to

the delay time included in the ANM, expires, the exchange 1

executes the number translation for the called number, and

forwards the IAM to the terminating exchange. Then, if the ANM

is received, corresponding to the IAM, from the terminating

15   exchange, the exchange 1 sends the REL to the information

provision apparatus 4 and, at the same time, performs the call

connection between the originating subscriber and the called

party. Here, the REL includes the information regarding the

service termination reasons. The SRMP 31 generates the service

20   provision report message, as shown in Table 4 and 5, and sends

it to the ICP 22. Besides, the SRMP 31 forwards the release

complete message (RLC) as a response to the REL, to the

originating exchange.

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Furthermore, if the value of RSLT of the service setup

response message transmitted from the ICP 33 to the SRMP 31 is

not "0", or when the information provision service is

unavailable for some reason or other, the SRMP 31 sends the

5   REL to the exchange 1. Then, the exchange 1 forwards the RLC

to the information provision apparatus 4 and, at the same

time, performs the call routing to the called party. Of

course, in this case, the SRMP 31 generates the service

provision report message, as shown in Table 4 and 5, and sends

10   it to the ICP 22.

Next, the ICP 22 checks whether the information provision

service has been normally executed or not, referring to the

service provision report message received from the SRMP 31. If

so, the ICP 22 gains access to the database 23 to read whether

15   or not the customized information is one that needs supplying

additional access information such as the telephone number or

URL information with which the subscriber may obtain more

detailed information. If so, the ICP 22 outputs a message to

the short message center so as to transmit the access

20   information to the subscriber. Furthermore, the ICP 22 takes

statistics on the executed information provision services and

stores the result to the database 23.

In the embodiment described above, the customized

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information can be supplied to the originating subscriber in a

manner that the exchange 1 is put in charge of the path

control and the apparatus 4 takes charge of the information

provision service merely. Of course, in the embodiment of the

5   invention, it is possible to apply the information provision

apparatus 4 insitu, not changing the configuration, and use

the same messages transmitting and receiving between the

exchange 1 and the apparatus 4.

As discussed above in detail, the information provision

10   apparatus 4 can be adapted in the same manner, even if the

exchange 1, interconnected with the apparatus 4, has the

function of path control for information provision service.

Besides, it is possible to connect the apparatus 4 to both the

exchanges with or without the path control function, at the

15   same time. However, in this case, it is required that the

apparatus 4 should notices whether or not the exchange

includes the path control function. The data for the

exchanges' path control function can be maintained with the

route information or trunk information. That is, the SRMP 31

20   can notice whether or not the exchanges have the path control

function by referring to the route information or trunk

information.

Fig. 10 is a block diagram showing another example of the

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configuration of the information service process subsystem IPS

30 in Fig. 3. In this embodiment of Fig. 3, the SRMP 31

couples the originating subscriber with the SRP 33, and

connects the originating subscriber to the terminating

5   exchange if the ANM is received from the terminating exchange.

Meanwhile, in this configuration of the embodiment, it may

happen that a busy tone or other voice information such as

notifications is received without any message during the

waiting time for the called party's answer. Accordingly, it is

10   necessary to make an appropriate counterplan to overcome the

problem.

Consequently, an audible tone detecting unit 333 is

further established in the SRP 33 in Fig. 10. The audible tone

detecting unit 333, having a digital signal processor (DSP),

15   for example, detects voice information or signal tones such as

ring back tone, congestion tone, busy tone, etc., and informs

the SRMP 31 of the result.

The SRMP 31 controls the SRP 33 to couple the path from

the terminating exchange and the audible tone detecting unit

20   333 through the traffic channel, when controlling the SWP 34

to couple the originating subscriber and the SRP 33 through

the traffic channel. If the audible tone such as busy tone or

notification is detected by the audible tone detecting unit

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333 while providing the customized information through the

information generating unit 332, the SRMP 31 stops the

information provision service and executes the process of

connecting the originating subscriber to the terminating

5   exchange. Consequently, it is possible to execute a stable

call process since the SRMP 31 can detects the audible tones

from the terminating exchange even while the originating

subscriber is receiving the providing service.

Meanwhile, in the embodiment describer above, the

10   information provision service is executed by way of the

separate information provision apparatus 4, whereas, it is

possible to execute the service through an existing

intelligent network constructed by applying the identical

concept of the present invention.

15   Fig. 11 is a block diagram depicting a configuration of

an information provision apparatus using an intelligent

network in accordance with another embodiment. A service

switching part (SSP) 120, a service control part (SCP) 130 and

an intelligent peripheral (IP) 140 are interconnected through

20   a No. 7 signaling protocol to construct the intelligent

network. The SSP 120 is coupled with the exchange 1 through

the E1 trunk and ISUP protocol, for example. The IP 140 is

interconnected to the SSP 120 through the No. 7 signaling

system and ISUP protocol for example, by means of trunks

physically. The IP 140 includes a plurality of information

provision devices. The number of the devices is set

appropriate to the kind of the customized information and to

5   the number of channels with the SSP 120.

The SCP 130 corresponds to the ICMS 20 in Fig. 3 and

includes a database corresponding to the database 23 in Fig.

3, accordingly. The SCP 130 gains access to the database and

supplies appropriate control information to the corresponding

10   devices, according to the demand from the SSP 120 and the IP

140. If the SSP120 receives a call connection information

including the originating number, the called number, the

originating subscriber's location information, etc. for

example, from the local exchange 1 through the ISUP protocol,

15   the SSP 120 sends the received information to the SCP130. The

SCP 130 allots a separate call reference number against the

corresponding call and outputs a predetermined control message

to the SSP 120, thus coupling the corresponding call to the IP

140.

20   If the call is received from the SSP 120, the intelligent

peripheral 140 refers to the SCP 130 using the call reference

number. Besides, the IP 140 connects the customized

information provision device to the originating subscriber

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based on the information ID received from the SCP 130, thus

providing the customized information to the originating

subscriber.

Meanwhile, if the originating subscriber is connected to

5   the IP 140, the SSP 120 executes the number translation based

on the called number, and forwards the initial address message

(IAM) to the terminating exchange. Then, if the answer message

(ANM) is received from the terminating exchange, as a response

to the IAM, the SSP 120 couples the originating subscriber

10   with the terminating exchange.

In the configuration described above according to another

embodiment of the invention, the information provision

apparatus using the intelligent network as described above

executes the information provision service in the same manner

15   with the embodiments discussed with reference to Fig. 2 and 3.

Besides, it is possible to supply the information provision

service to the originating subscriber successfully, minimizing

the modification of the software and hardware of the exchange

1, since the information provision service is executed by

20   means of the service switching part (SSP) 120 in the

intelligent network (IP) 140.

In the embodiments described above, the information

provision apparatus is defined to provide the customized

information to the originating subscriber, however, if the

customized information is commercial advertisements, it is

possible to discount the telephone fees as much as the time

for receiving the corresponding commercial advertisement.

5   Meanwhile, the above embodiments are discussed with the

apparatus for providing the access information with which the

subscriber obtains more detailed information when the

customized information has been transmitted to the originating

subscriber successfully. However, the customized information

10   can be supplied by various manners in which the service

information stored in the database 23 is controlled

appropriately. For example, the access information may be

supplied at any time without regard to the completion of the

information provision service. Besides, it is possible to

15   provide only the access information with which the originating

subscriber may obtain more detailed information, without

providing the customized information.

        Besides, it is still possible to provide character

strings, images, moving images, etc., which the subscriber can

20   perceive visibly, instead of the access information, in

conformity with the capabilities of the terminal and the

system as well.

        Furthermore, in the embodiments described above, the

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information provision service is supplied only to the service

subscriber in a manner that the exchange 1 refers to the home

location register (HLR) 4 to identify whether the originating

caller is an information provision service subscriber or not,

5   however, it is also possible to supply the information

provision service to all the caller by applying the identical

concept of the present invention. This makes it more

advantageous and convenient, if the information is an official

announcement which needs prompt transmission, for example.

10   In addition, the embodiment of the present invention is

discussed based on the mobile communication system, however,

it is still possible to apply the identical concept of the

invention to the PSTN or other communication systems.

In accordance with the present invention as described

15   above, the information provision service is executed

corresponding to the subscriber's originating call during the

waiting time for the called party's answer. Accordingly, the

service subscriber can obtain the realtime information

efficiently without any additional key operation or time

20   consumption.

Besides, according to the present invention, it is

possible to provide realtime customized information to the

service subscriber based on the originating subscriber's

information and/or its location information. Since the
customized information can be selected through on-line
network, the efficiency of the information provision service
is enhanced as well.

5   Furthermore, according to the invention, it is possible
to utilize the communication terminals such as telephone set
or mobile terminal efficiently as a means of gaining necessary
information, since the subscriber can receive the customized
information without any additional key operation.

10   Moreover, according to the invention, the information
provision service supplies the access information additionally
with which the subscriber can obtain more detailed
information, after providing predetermined customized
information to the subscriber. Accordingly, the subscriber can

15   gain desired customized information, minimizing the key
operation.

It will be apparent to those skilled in the art that
various modifications and variations can be made in a method
and apparatus for providing customized information during call

20   setup process in telecommunication system of the present
invention without deviating from the spirit or scope of the
invention. Thus, it is intended that the present invention
cover the modifications and variations of this invention

provided they come within the scope of the appended claims and their equivalents.

Claims:

1.   A method for providing predetermined information
during a call setup process in a telecommunication system
which includes a plurality of exchanges and enables a caller

5   and a receiver to communicate with each other by performing a
call process, the method providing predetermined customized
information to an originating subscriber during the call setup
process.

2.   A method for providing customized information during

10   a call setup process in a telecommunication system which
includes a plurality of exchanges and enables a caller and a
receiver to communicate with each other by performing a call
control process, the method comprising the steps of:
      receiving a call setup request from the caller;

15   identifying whether the caller is an information
provision service subscriber or not;
      supplying a predetermined information provision service
if the caller is identified as a valid subscriber in the step
of identification;

20   executing the call control process for the caller; and
          connecting the call between the caller and a called party

when the call is answered by the called party.

3. The method for providing customized information during call setup process in telecommunication system as recited in claim 2, where the step identifying the subscriber is executed base on an originating number.

4. The method for providing customized information during call setup process in telecommunication system as recited in claim 2, wherein the step of identifying the subscriber is executed based on a predetermined service access code contracted between the caller and the exchange, the service access code being dialed by the caller when making the call setup request.

5. The method for providing customized information during call setup process in telecommunication system as recited in claim 2, wherein further includes a step of selecting the customized information prior to making the call setup request by the caller.

6. The method for providing customized information during call setup process in telecommunication system as

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recited in claim 2, wherein further includes a step of

confirming the kind of the customized information prior to the

step of the information provision.

7.   The method for providing customized information

5   during call setup process in telecommunication system as

recited in claim 2 or 6, wherein the step of confirming the

kind of the customized information is performed based on at

least an originating subscriber's information and an

originating subscriber's location information.

10   8.   The method for providing customized information

during call setup process in telecommunication system as

recited in claim 2, wherein further includes a step of

delaying the terminating call process for a predetermined

time.

15   9.   The method for providing customized information

during call setup process in telecommunication system as

recited in claim 8, wherein the delay time for delaying the

terminating call process is selected by the subscriber.

10.   The method for providing customized information

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during call setup process in telecommunication system as recited in claim 8, wherein the delay time for delaying the terminating call process is selected by the customized information to be supplied to the originating subscriber.

5   11.   The method for providing customized information during call setup process in telecommunication system as recited in claim 2, wherein further includes a step of supplying an access information to the originating subscriber, the access information being used by the subscriber who wants
10   to obtain more detailed information corresponding to the information provided.

       12.   The method for providing customized information during call setup process in telecommunication system as recited in claim 11, wherein the access information is
15   provided through a short message service center.

       13.   The method for providing customized information during call setup process in telecommunication system as recited in claim 11, wherein the access information is a telephone number.

14.   The method for providing customized information
during call setup process in telecommunication system as
recited in claim 11, wherein the access information is a URL
information.

5   15.   The method for providing customized information
during call setup process in telecommunication system as
recited in claim 11, 12, or 13, wherein the access information
is provided if the information provision service has been
executed to the subscriber normally.

10   16.   The method for providing customized information
during call setup process in telecommunication system as
recited in claim 2, wherein a predetermined call charge is
discounted if the originating subscriber receives a commercial
advertisement.

15   17.   The method for providing customized information
during call setup process in telecommunication system as
recited in claim 2, wherein further includes a step of
providing detailed information corresponding to the
information provided.

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18. The method for providing customized information during call setup process in telecommunication system as recited in claim 17, wherein the detailed information is a character string information.

19. The method for providing customized information during call setup process in telecommunication system as recited in claim 17, wherein the detailed information is a image information.

20. The method for providing customized information during call setup process in telecommunication system as recited in claim 17, wherein the detailed information is a moving image information.

21. A method for providing customized information during a call setup process in a telecommunication system which includes a plurality of exchanges and enables a caller and a receiver to communicate with each other by performing a call control process, the method comprising the steps of:

receiving a call request from the caller;

identifying whether the caller is an information provision service subscriber or not;

providing an access information to the caller for gaining

access to predetermined detailed information if the caller is

identified as the subscriber in the step of identification;

executing the call control process for the caller; and

5   connecting the call between the caller and a called party

when the called party answers to the call.

22. A system for providing customized information during

a call setup process in a telecommunication system comprising:

10   a subscriber's information storing means for storing

subscribers' information indicating whether an originating

caller is an information service subscriber or not;

an exchange, composed in a switching network, for

executing a call process between a caller and a called party,

15   and for routing the corresponding call to an information

provision apparatus if the caller is the information service

subscriber; and

an information provision apparatus, including a path

control function for routing the originating call to a called

20   party, for providing a predetermined provision service to the

originating subscriber of the call routed by the exchange, and

for connecting the originating subscriber to the called party

when the call is answered by the called party

23. The system for providing customized information during call setup process in telecommunication system as recited in claim 22, wherein the exchange supplies an originating number, a terminating number and an originating

5   subscriber's location information to the information provision apparatus.

24. The system for providing customized information during call setup process in telecommunication system as recited in claim 23, the originating subscriber's location

10   information is transmitted through a UUI parameter.

25. The system for providing customized information during call setup process in telecommunication system as recited in claim 23, wherein the information provision apparatus supplies the predetermined provision service to the

15   originating subscriber based on at least one of the originating number and the originating subscriber's location number.

26. The system for providing customized information during call setup process in telecommunication system as

20   recited in claim 22, wherein the information provision

apparatus, connected with a short message service center, can
transmit a short message.

27. The system for providing customized information
during call setup process in telecommunication system as
5   recited in claim 26, wherein the short message is an access
information with which the originating subscriber can obtain
more detailed information corresponding to the customized
information.

28. The system for providing customized information
10   during call setup process in telecommunication system as
recited in claim 27, wherein the access information is a
telephone number.

29. The system for providing customized information
during call setup process in telecommunication system as
15   recited in claim 27, wherein the access information is a URL
information.

30. The system for providing customized information
during call setup process in telecommunication system as
recited in claim 27, wherein the access information is

supplied if the information provision service has been

executed successfully.

31. The system for providing customized information

during call setup process in telecommunication system as

5   recited in claim 22, wherein the information provision

apparatus can be connected with the Internet.

32. The system for providing customized information

during call setup process in telecommunication system as

recited in claim 31, wherein an originating subscriber selects

10   a kind of the customized information on the Internet.

33. The system for providing customized information

during call setup process in telecommunication system as

recited in claim 22, wherein the information provision

apparatus delays the call process for the originating

15   subscriber for a predetermined time.

34. The system for providing customized information

during call setup process in telecommunication system as

recited in claim 33, wherein the delay time is set according

to the kind of the customized information.

35. The system for providing customized information during call setup process in telecommunication system as recited in claim 33, wherein the delay time is set by a service subscriber.

5   36. The system for providing customized information during call setup process in telecommunication system as recited in claim 22, wherein the information provision apparatus includes:

an information service process subsystem, interconnected

10   with an exchange through trunks, for executing a call routing process and a call connection process, for transmitting a service setup request message having at least a calling party's number to an information service control/management subsystem when the call is routed from the exchange, and for

15   providing predetermined customized information to the originating subscriber according to a service setup response message output from the information service control/management subsystem; and

an information service control/management subsystem,

20   including a database for storing subscribers' information and service information, for transmitting the service setup response message including at least an information ID against

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the information setup request message to the information
service process subsystem,

the information service process subsystem including a
predetermined number translation table, transmitting the

5   service setup request message, executing a terminating call
process, and performing the call connection process between
the originating subscriber and a called party when the call is
answered by the called party.

37. The system for providing customized information

10   during call setup process in telecommunication system as
recited in claim 36, wherein the service setup request message
includes an originating subscriber's location information, and
the information service control/management subsystem generates
an information ID based on at least one of the originating

15   number and the originating subscriber's location number.

38. The system for providing customized information
during call setup process in telecommunication system as
recited in claim 36, wherein the information service process
subsystem transmits a service provision report message,

20   indicating a result of providing the service, to the
information service control/management subsystem.

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39. The system for providing customized information during call setup process in telecommunication system as recited in claim 38, wherein the information service control/management subsystem takes statistics on executed
5   information provision services.

40. The system for providing customized information during call setup process in telecommunication system as recited in claim 36 or 38, wherein the information control/management subsystem is coupled to a short message
10 service center and transmits a short message.

41. The system for providing customized information during call setup process in telecommunication system as recited in claim 40, wherein the short message is transmitted based on the service provision report message.

15 42. The system for providing customized information during call setup process in telecommunication system as recited in claim 36, wherein the information provision apparatus further includes a web server capable of connecting to the Internet, the web server supplying an access function
20 for accessing to the database.

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43. The system for providing customized information during call setup process in telecommunication system as recited in claim 36, wherein the service setup response message includes a predetermined timing data, the information
5   service process subsystem delays the terminating call process for the corresponding timing data.

44. The system for providing customized information during call setup process in telecommunication system as recited in claim 36, wherein the information service process
10   subsystem comprises:

a specialized resource part, including predetermined customized information to be supplied to the originating subscriber, for outputting the corresponding customized information through a predetermined traffic channel;

15   a specialized resource signaling part for executing a trunk connection process with the exchange;

a switching part for performing a traffic channel connection between the specialized resource part and the originating subscriber based on control data; and

20   a specialized resource management part for controlling the call process with the exchange, for confirming the customized information to be supplied to the originating

subscriber based on the originating subscriber's information

applied from the exchange, interconnecting with the

information service control/management subsystem, for

controlling the specialized resource part and the switching

5   part based on the confirmed result to supply the customized

information to the originating subscriber.

45.   The system for providing customized information

during call setup process in telecommunication system as

recited in claim 44, wherein the customized information

10   apparatus included in the specialized resource part is

downloaded from the information service control/management

subsystem.

46.   The system for providing customized information

during call setup process in telecommunication system as

15   recited in claim 44, wherein the specialized resource part

further includes an audible tone detecting means for detecting

audible information, and the specialized resource management

part couples the audible tone detecting means with a called

party during the information provision service, and connects

20   the originating subscriber with the called party if an audible

tone is detected by the audible tone detecting means.

47. A system for providing customized information during call setup process in telecommunication system comprising:

a subscriber's information storing means for storing subscribers' information and data indicating whether an

5 originating caller is an information service subscriber or not;

an exchange, composed in a switching network, for executing a call connection process between a caller and a called party, for routing the corresponding call to an

10 information provision apparatus if the caller is an information service subscriber, and connects the caller to a called party when the called party answers to the call; and

an information provision apparatus for providing predetermined customized information to the originating

15 subscriber connected through the exchange.

48. The system for providing customized information during call setup process in telecommunication system as recited in claim 47, wherein the exchange forwards an initial address message to the information provision apparatus when

20 executing the call connection process, and the initial address message includes at least one among an originating number, a terminating number and an originating subscriber's location

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information.

49. The system for providing customized information
during call setup process in telecommunication system as
recited in claim 48, wherein the originating subscriber's
5   information is transmitted through a UUI parameter.

50. The system for providing customized information
during call setup process in telecommunication system as
recited in claim 48, wherein the information provision system
sends an address complete message against the initial address
10   message transmitted from the exchange, the address complete
message including predetermined timing data, and the exchange
delays the terminating call process for the corresponding
timing data.

51. The system for providing customized information
15   during call setup process in telecommunication system as
recited in claim 47, wherein the exchange transmits a call
release message to the information provision apparatus when
the called party answers to the call, and the information
provision apparatus suspends the information provision service
20   according to the call release message.

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52. The system for providing customized information during call setup process in telecommunication system as recited in claim 47, wherein the information provision apparatus supplies a call release message when the information

5   provision service is unavailable,

the exchange connects the originating subscriber with the called party when the call release message is received from the information provision apparatus.

53. The system for providing customized information

10   during call setup process in telecommunication system as recited in claim 50, wherein the delay time is set according to the kind of the customized information.

54. The system for providing customized information during call setup process in telecommunication system as

15   recited in claim 50, wherein the delay time is set by a service subscriber.

55. The system for providing customized information during call setup process in telecommunication system as recited in claim 48, wherein the information provision

20   apparatus supplies the customized information to the

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originating subscriber based on at least one of the

originating number and the originating subscriber's location

information.

56. The system for providing customized information

during call setup process in telecommunication system as

recited in claim 47, wherein the information provision

apparatus, connected with a short message service center, can

transmit a short message.

57. The system for providing customized information

during call setup process in telecommunication system as

recited in claim 56, wherein the short message is an access

information with which the originating subscriber can obtain

more detailed information corresponding to the customized

information.

58. The system for providing customized information

during call setup process in telecommunication system as

recited in claim 57, wherein the access information is a

telephone number.

59. The system for providing customized information

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during call setup process in telecommunication system as recited in claim 57, wherein the access information is a URL information.

60. The system for providing customized information during call setup process in telecommunication system as recited in claim 57, wherein the access information is supplied if the information provision service has been executed successfully.

61. The system for providing customized information during call setup process in telecommunication system as recited in claim 47, wherein the information provision apparatus can be connected with the Internet.

62. The system for providing customized information during call setup process in telecommunication system as recited in claim 61, wherein an originating subscriber selects a kind of the customized information on the Internet.

63. The system for providing customized information during call setup process in telecommunication system as recited in claim 47, wherein the exchange delays the call

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process for the originating subscriber for a predetermined

time.

64.   The system for providing customized information

during call setup process in telecommunication system as

5   recited in claim 47, wherein the information provision

apparatus includes:

an information service process subsystem, interconnected

with the exchange through trunk lines, for executing a call

routing process and a call connection process, for

10   transmitting a service setup request message having at least

an originating number based on an initial address message

applied from the exchange to an information service

control/management subsystem, and for providing the customized

information to the originating subscriber based on a service

15   setup response message output from the information service

control/management subsystem; and

an information service control/management subsystem,

including a database for storing subscribers' information and

service information, for transmitting the service setup

20   response message including at least an information ID against

the information setup request message to the information

service process subsystem.

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65. The system for providing customized information during call setup process in telecommunication system as recited in claim 64, wherein the service setup request message includes an originating subscriber's location information, and

5   the information service control/management subsystem generates an information ID based on at least one of the originating number and the originating subscriber's location number.

66. The system for providing customized information during call setup process in telecommunication system as

10   recited in claim 64, wherein the information service process subsystem transmits a service provision report message, indicating a result of providing the service, to the information service control/management subsystem.

67. The system for providing customized information during call setup process in telecommunication system as

15   recited in claim 66, wherein the information service control/management subsystem takes statistics on executed information provision services.

68. The system for providing customized information during call setup process in telecommunication system as

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recited in claim 64, wherein the information

control/management subsystem is coupled to a short message

service center and transmits a short message.

69.   The system for providing customized information

5   during call setup process in telecommunication system as

recited in claim 66 or 68, wherein the short message is

transmitted based on the service provision report message.

70.   The system for providing customized information

during call setup process in telecommunication system as

10   recited in claim 64, wherein the information provision

apparatus further includes a web server capable of connecting

to the Internet, the web server supplying an access function

for accessing to the database.

71.   The system for providing customized information

15   during call setup process in telecommunication system as

recited in claim 64, wherein the service setup response

message includes a predetermined timing data, the information

service process subsystem generating an address complete

message including the timing data to send it to the exchange.

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72. The system for providing customized information during call setup process in telecommunication system as recited in claim 64, wherein the information service process subsystem comprises:

5   a specialized resource part, including predetermined customized information to be supplied to the originating subscriber, for outputting the corresponding customized information through a predetermined traffic channel;

a specialized resource signaling part for executing a
10   trunk connection process with the exchange;

a switching part for performing a traffic channel connection between the specialized resource part and the originating subscriber based on control data; and

a specialized resource management part for controlling
15   the call process with the exchange, for confirming the customized information to be supplied to the originating subscriber based on the originating subscriber's information applied from the exchange, interconnecting with the information service control/management subsystem, for
20   controlling the specialized resource part and the switching part based on the confirmed result to supply the customized information to the originating subscriber.

73. The system for providing customized information
during call setup process in telecommunication system as
recited in claim 72, wherein the customized information
apparatus included in the specialized resource part is

5   downloaded from the information service control/management
subsystem.

74. The system for providing customized information
during call setup process in telecommunication system as
recited in claim 64, wherein the specialized resource part

10   further includes an audible tone detecting means for detecting
audible information, the specialized resource management part
couples the audible tone detecting means with the called party
during the information provision service, and connects the
originating subscriber with the called party if an audible

15   tone is detected by the audible tone detecting means.

75. A system for providing customized information during
a call setup process in a telecommunication system comprising:
an exchange, composed in a switching network, for
executing a call process between a caller and a called party,

20   for routing the corresponding call to an information provision
apparatus if a call request includes a predetermined

discrimination number against a terminating number; and

an information provision apparatus, including a path
control function for routing the originating call to a called
party, for supplying a predetermined provision service to the

5   originating subscriber of the call routed by the exchange, and
for connecting the originating subscriber to the called party
when the call is answered by the called party

76. A system for providing customized information during
a call setup process in a telecommunication system comprising:

10   an exchange, composed in a switching network, for
executing a call process between a caller and a called party,
for routing the corresponding call to an information provision
apparatus if a call request includes a predetermined
discrimination number against a terminating number, and for

15   connecting the originating subscriber to a called party if an
answer is received from the called party; and

an information provision apparatus for providing
predetermined customized information to the originating
subscriber connected through the exchange.

20   77. A system for providing customized information during
a call setup process in a telecommunication system including:

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a home location register for providing predetermined call

routing information about information provision service

subscribers;

a visitor location register for storing subscribers'

5   information whether an originating call for each subscriber is

one that needs to be referred to the home location register or

not;

an exchange, composed in a switching network, for

executing a call control process, for referring to the visitor

10   location register against the originating call from the

subscriber, and for performing a call routing process to the

information provision service using the routing information

from the home location register if the caller is one that

needs to be referred to the home location register; and

15   an information provision apparatus, including a path

control function for routing the call of the originating

subscriber to the called party, for providing predetermined

customized information to the originating subscriber of the

call routed by the exchange, and for connecting the

20   originating subscriber to the called party when the call is

answered by the called party.

78.   A system for providing customized information

during a call setup process in telecommunication system

comprising:

a home location register for providing predetermined call

routing information about the subscribers;

5   a visitor location register for storing subscribers'

information whether an originating call for each subscriber is

one that needs to be referred to the home location register or

not;

an exchange, composed in a switching network, for

10   executing a call control process, for referring the visitor

location register against the originating call, for performing

a call routing process to the information provision apparatus

using the routing information of the home location register if

the caller is one that needs to be referred to the home

15   location register, for executing a path control process based

upon a called number, and for connecting the originating

subscriber to the called party when the called party answers

to the call; and

an information provision apparatus for providing

20   predetermined customized information to the originating

subscriber through the exchange.

79.   A system for providing customized information

during a call setup process in a telecommunication system

comprising:

a first exchange having a path control function;

a second exchange having no path control function; and

5   an information provision apparatus, interconnected with

both the first and second exchanges through trunks, including

the selective path control function, for providing

predetermined customized information to the originating

subscriber of the call routed by the exchange, the information

10   provision apparatus executing the path control process for the

call from the second exchange.

80.   The system for providing customized information

during call setup process in telecommunication system as

15   recited in claim 79, wherein the selective terminating call

process is executed based on information of the trunk lines

connected with the exchanges.

81.   A system for providing customized information

during a call setup process in a telecommunication system

20   comprising:

an exchange, composed in a switching network, having a

database for storing subscribers' information indicating

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whether an originating caller is an information service

subscriber or not, for executing a call control process, and

for routing the corresponding call to an intelligent network

if the caller is the information service subscriber; and

5   an intelligent network including a service switching part

for performing the information provision service, an

intelligent peripheral for storing a plurality of customized

information to be provided to the subscribers, and a service

switching part for performing a switching process for the call

10   from the exchange,

the service switching part transmitting a message

including at least a calling party's number to the service

control part,

the service control part controlling the service

15   switching part to connect the call to the intelligent

peripheral and controlling the intelligent peripheral to

output predetermined customized information, and

the service switching part connecting the originating

subscriber to the called party when the called party answers

20   to the call.

Fig.1

1/11
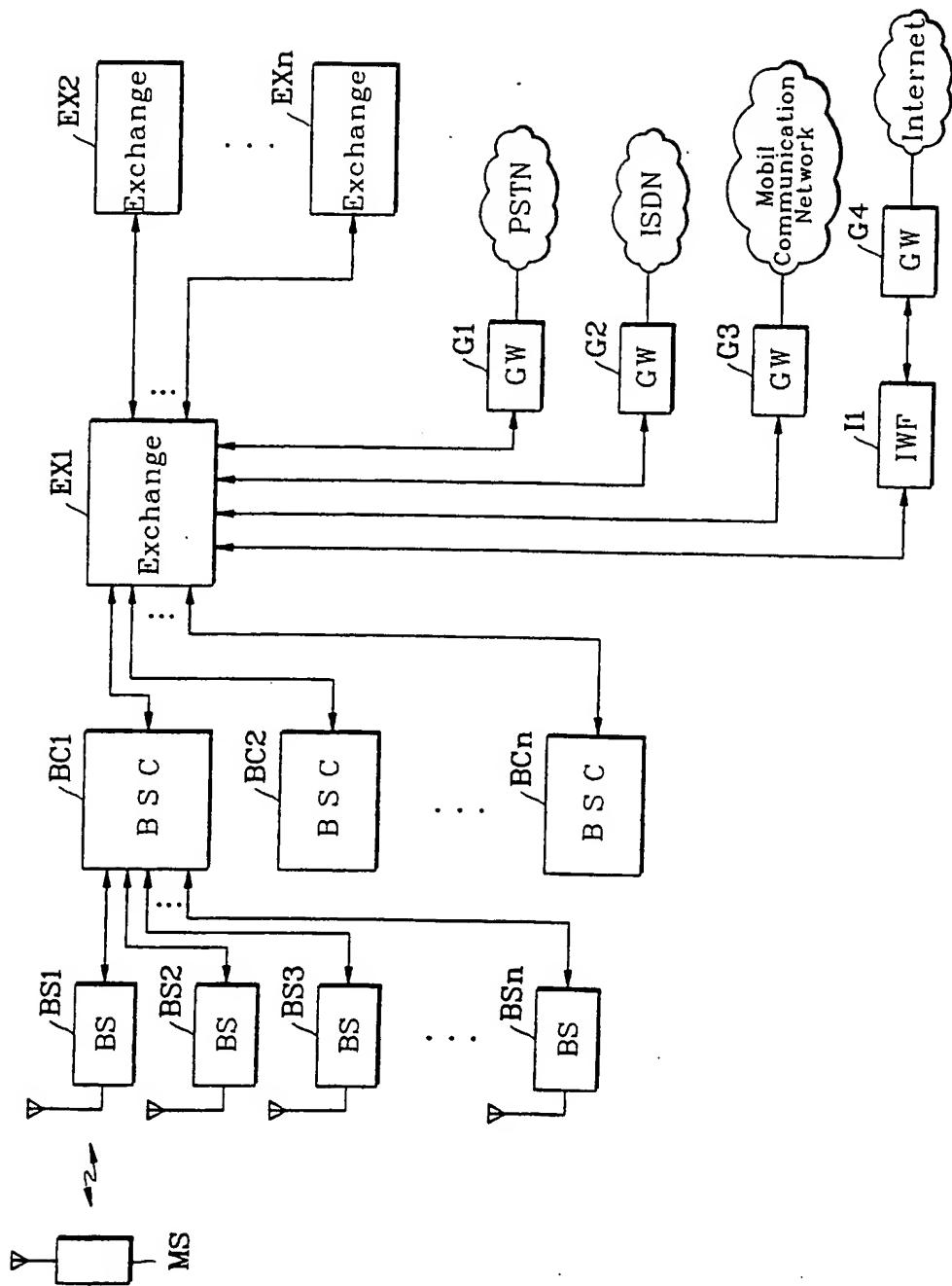
Fig.2

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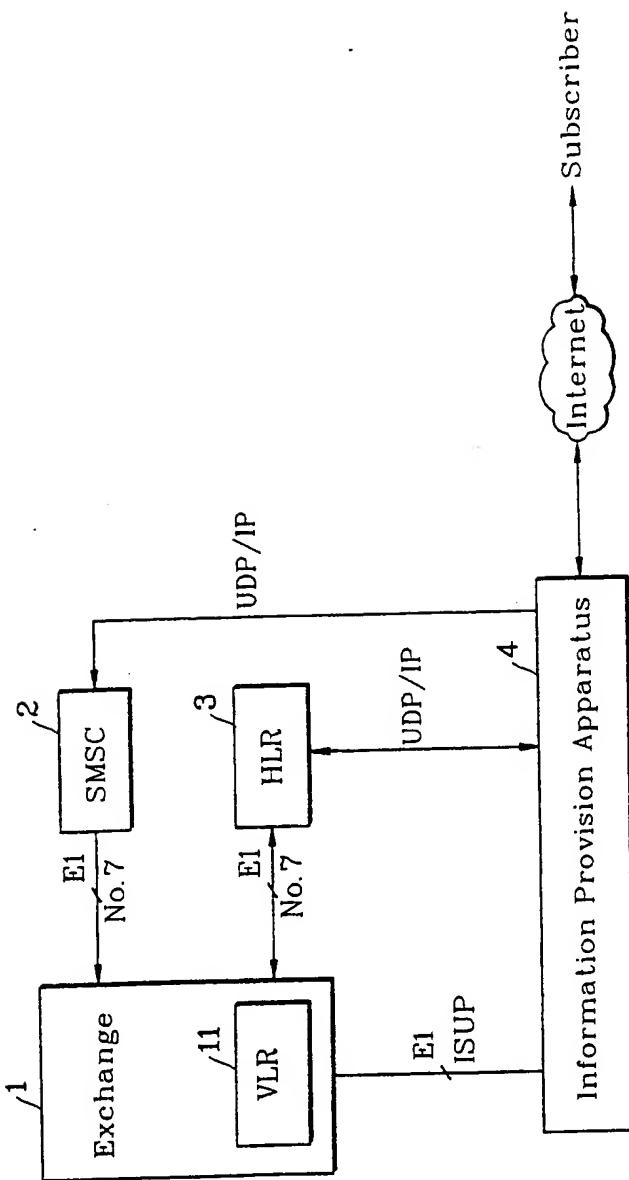
Fig.3
3/11
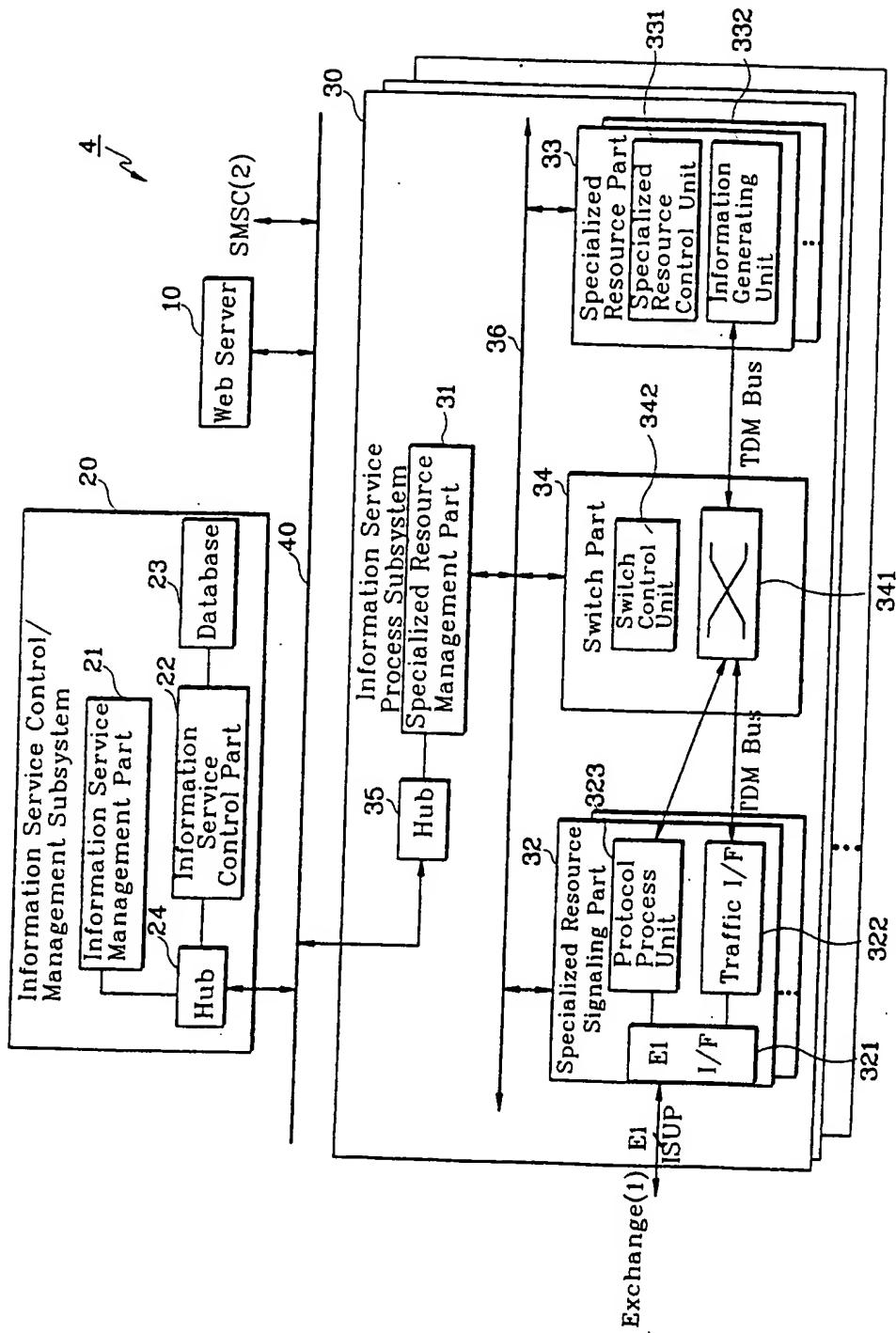
Fig.4

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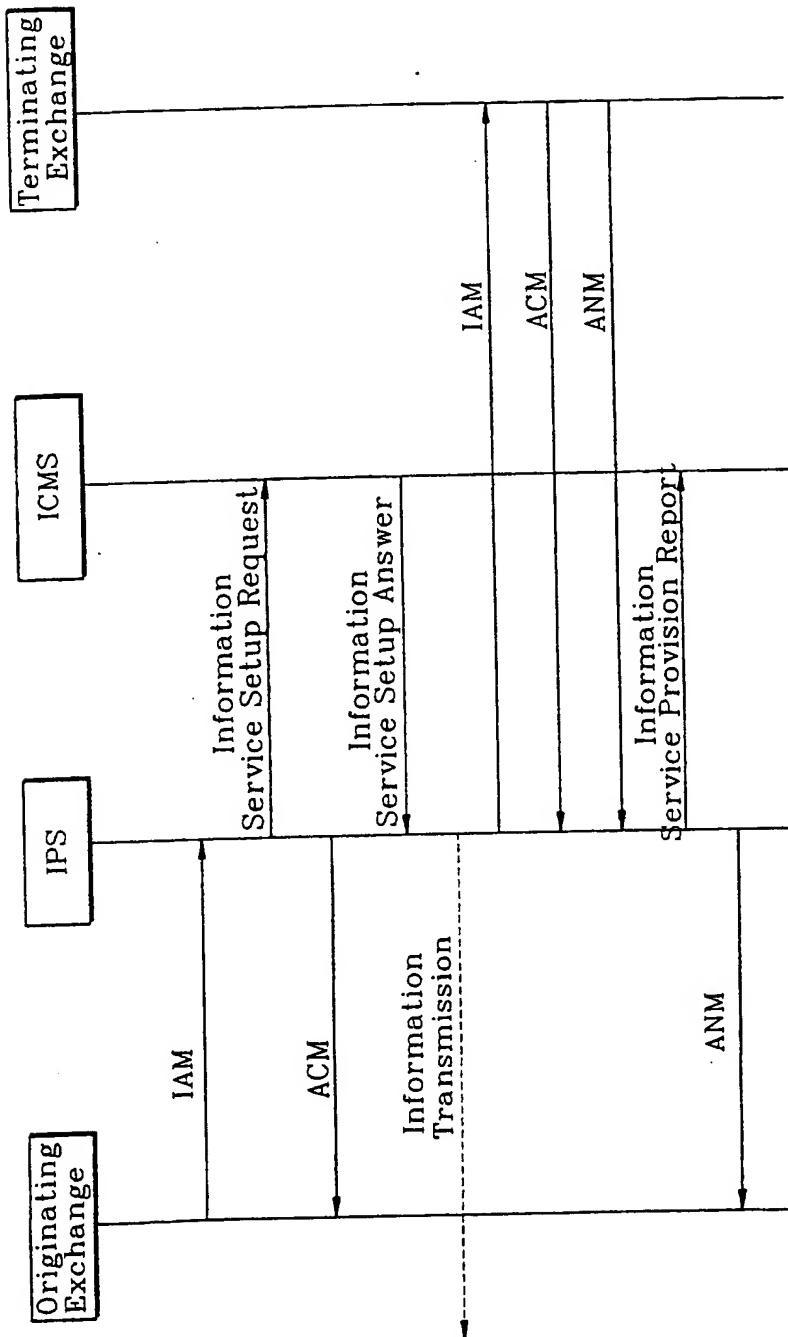
Fig.5

5/11
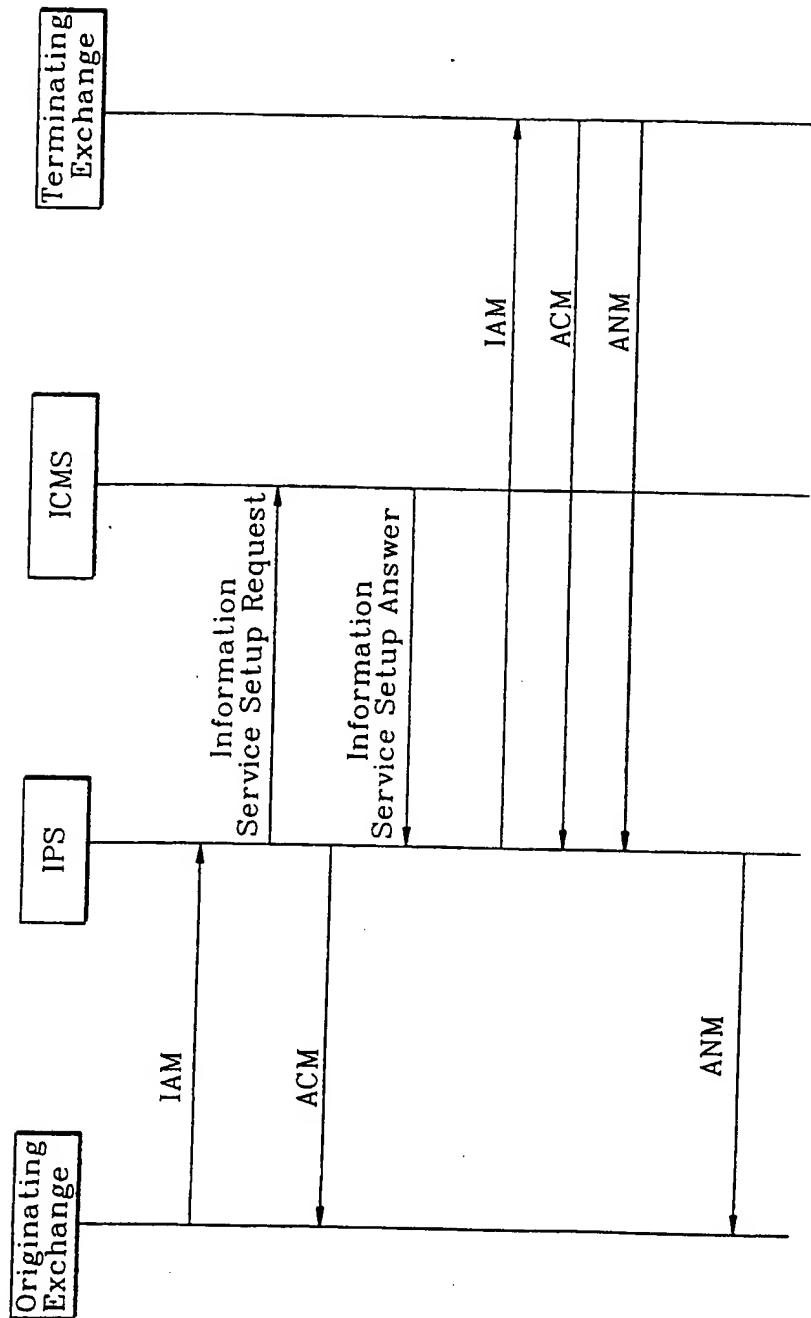
Fig.6
6/11
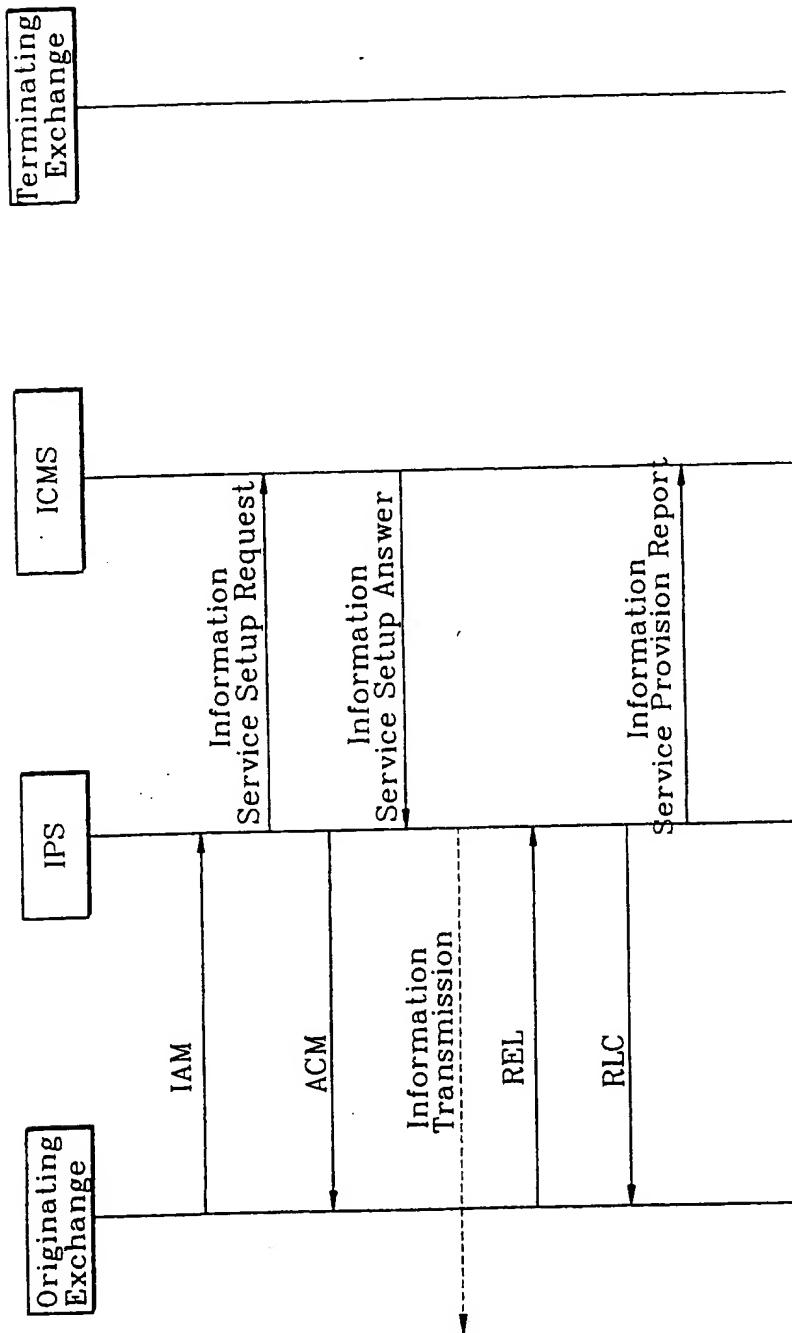
Fig.7
7/11
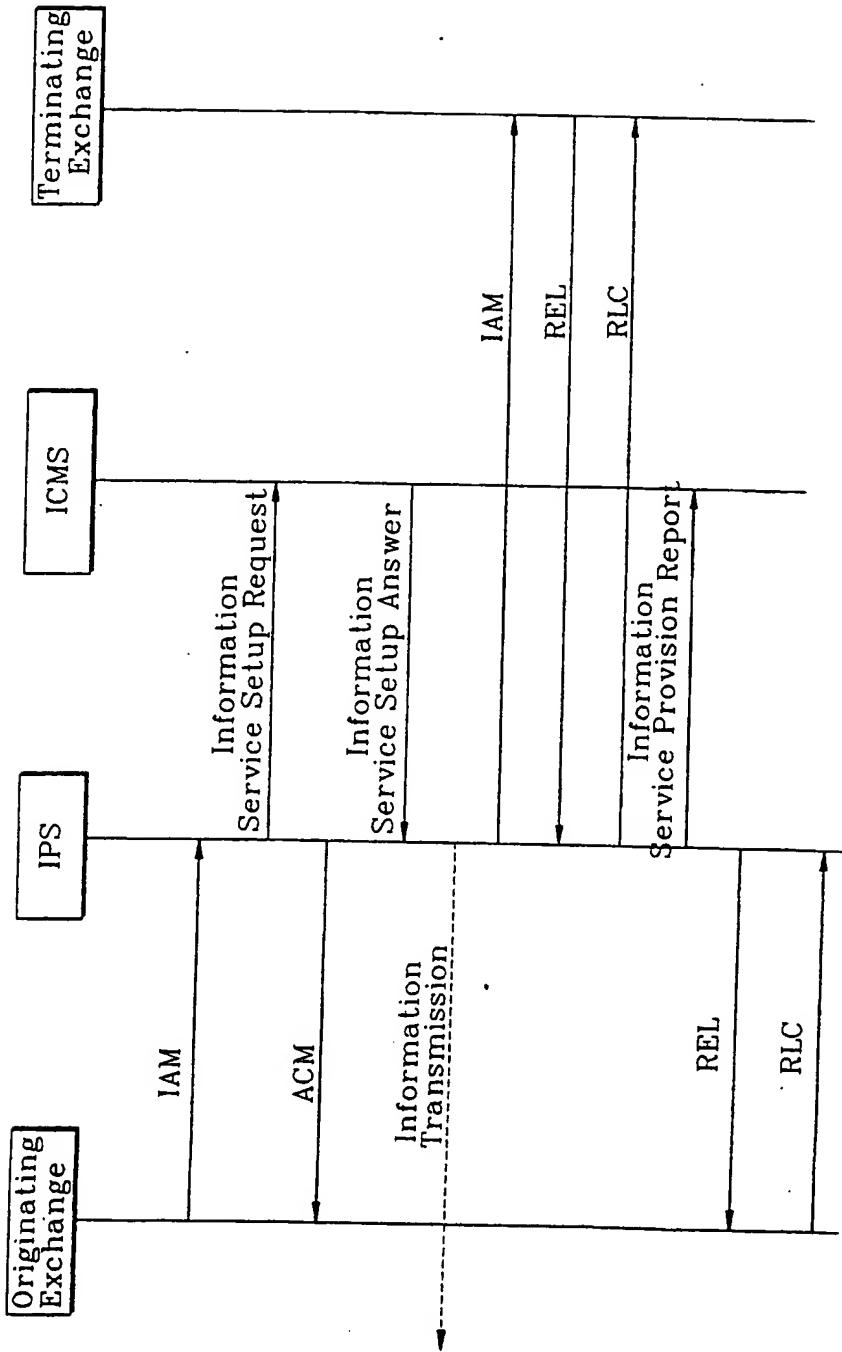
Fig.8

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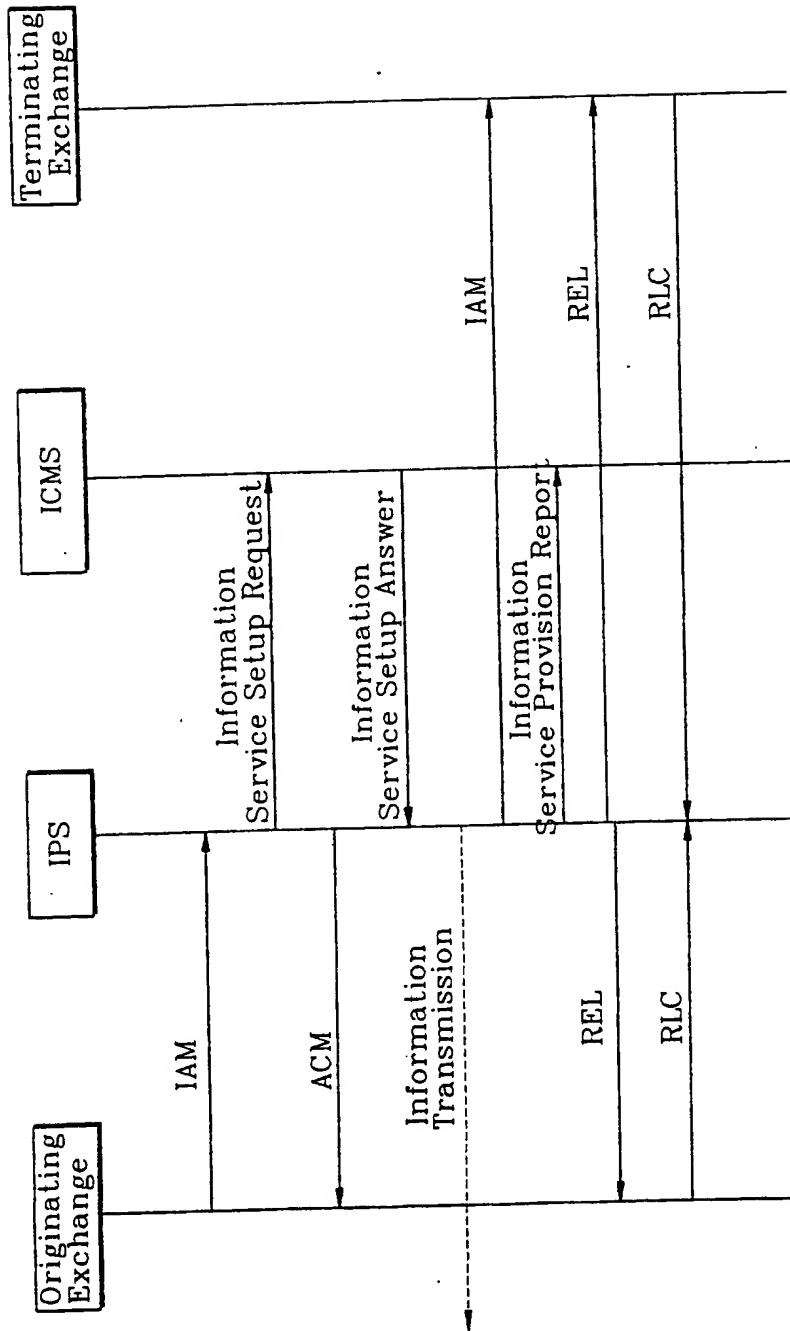
Fig.9

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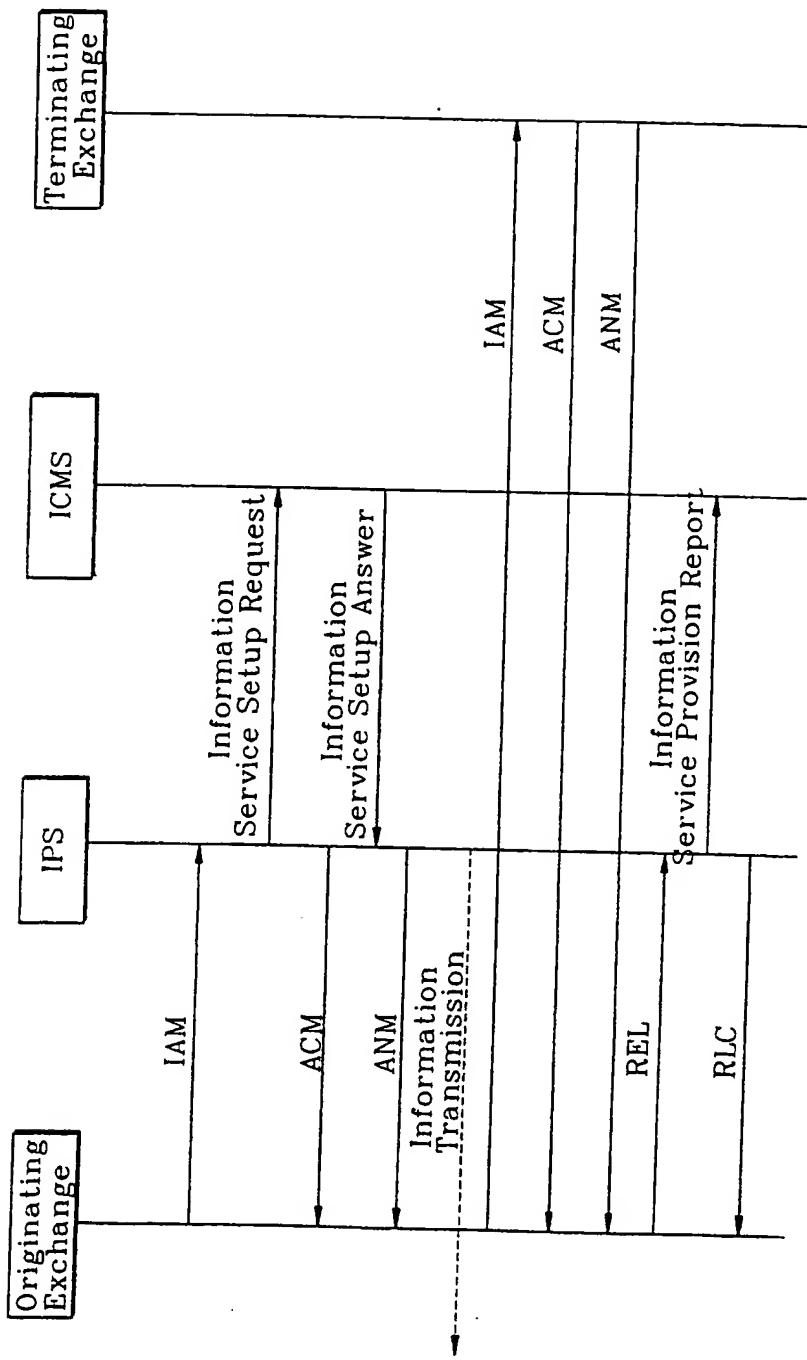
Fig.10

10/11
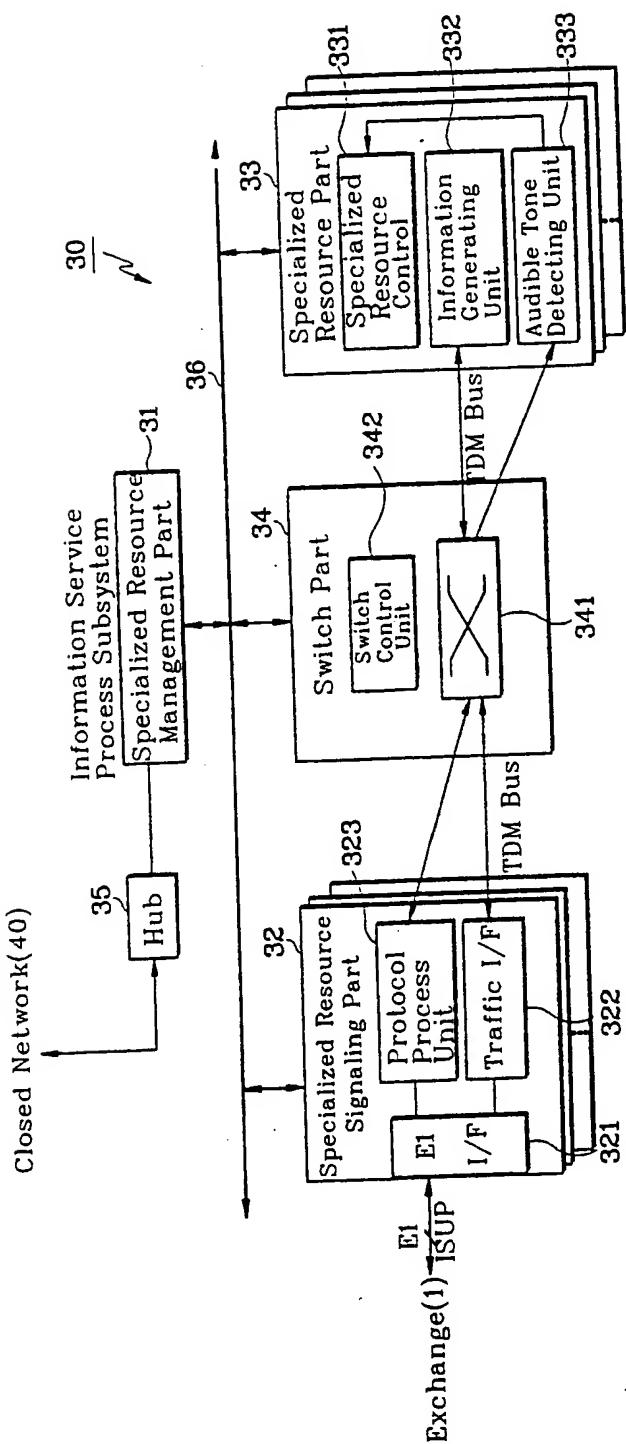
Fig.11

11/11
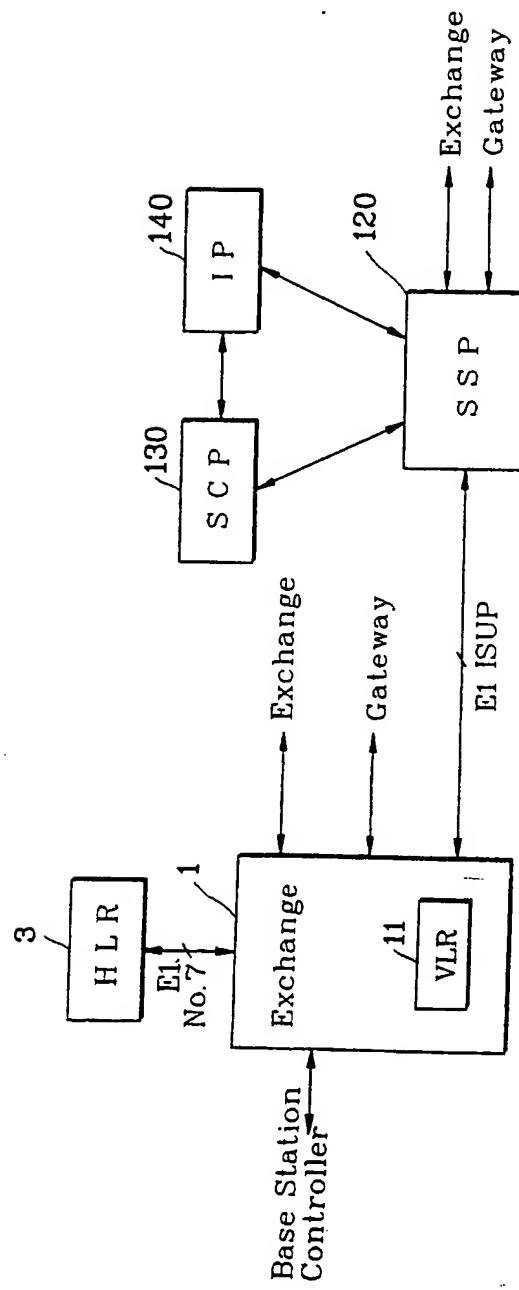
A	CLASSIFICATION OF SUBJECT MATTER

IPC7 H04B 7/26

According to International Patent Classification (IPC) or to both national classification and IPC

B	FIELDS SEARCHED

Minimun documentation searched (classification system followed by classification symbols)

IPC7 H04B 7/26, H04Q 7/22, H04Q7/24, H04Q 7/38, H04M 11/00

Documentation searched other than minimun documentation to the extent that such documents are included in the fileds searched

Korean Patents and applications for inventions since 1975
Korean Utility models and applications for Utility models since 1975

Electronic data base consulted during the intertnational search (name of data base and, where practicable, search trerms used)

C	DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
A	KR 99-42254 A (LG electronic Corp) 16 June 1999 See the abstract	1-2,21-22,43,75-79,81
A	EP 725550 A (Paradyne Corp) 03 December 1997 See the abstract	1-2,21-22,43,75-79,81
A	US 5351582 A (AT&T Corp) 06 December 1994 See the abstract	1-2,21-22,43,75-79,81

☐ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevence; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
02 NOVEMBER 2000 (02 11 2000)	08 NOVEMBER 2000 (08 11 2000)

Name and mailing address of the ISA/KR	Authorized officer
Korean Industrial Property Office Government Complex-Taejon, Dunsan-dong, So-ku, Taejon Metropolitan City 302-701, Republic of Korea Facsimile No 82-42-472-7140	YOON, Byoung Soo Telephone No 82-42-481-5709

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

Information on patent family members

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EP 725550 A	03. 12. 1997	US 6055443 A US 5787364 A JP 8322088 A CN 1134648 A CA 2167336 A	25. 04. 2000 28. 07. 1998 03. 12. 1996 30. 10. 1996 31. 07. 1996
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